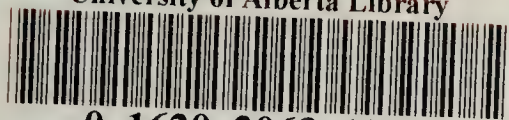


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BLUE JAY

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COVERS: **Front** - Hummingbird Clearwing (*Hemaris thysbe*), a common day-flying sphinx moth of the Prairie Provinces.

Photograph taken at Balmoral, Manitoba by Catherine Thexton.

Back - Prairie Rattlesnake at Grasslands National Park, 4 September 2000.

Photograph by Hamilton Greenwood.

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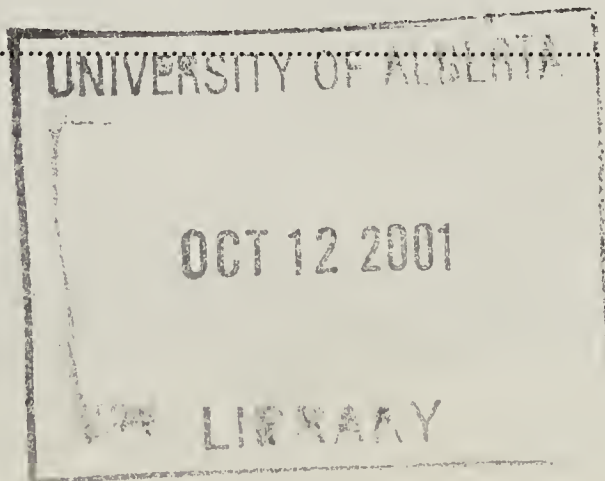
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THE BARN OWL COMES TO ALBERTA ... FINALLY

LISA TAKATS and GORDON COURT, Beaverhill Bird Observatory and Alberta Sustainable Resource Development , 7th floor, O.S. Longman Building, 6909-116 Street, Edmonton, AB T6H 4P2

The Barn Owl is one of the most widely distributed of all land birds. It is found throughout most of Britain and Europe, across most of Asia, Africa, and throughout much of North America. It is also found in grassland areas of South America, as well as oceanic islands such as the Galapagos and Hawaii.^{1, 7} This species resides in North America from southwestern British Columbia through Washington, Oregon, northern Utah, southern Wyoming, southern Michigan, to southern Ontario. From Massachu-

setts, the range runs south to Florida and through the entire southern United States into South America.⁷ The Barn Owl is rare in the northern tier of the United States, north of latitude 41°, but it increases in abundance southward (Figure 1).²

The Barn Owl is limited in its northern distribution. In Montana, the Barn Owl is a stray or accidental species, with fewer than 15 records in the state (D. Holt, pers. comm.). It has been suggested that the Barn Owl may wander north to southern Alberta, southern Saskatchewan, and southern Manitoba.⁷ In British Columbia, breeding records are restricted to southern Vancouver Island from Sooke to Ladysmith, and in the Fraser Lowlands from Vancouver and Reifel Island east through the Fraser River Valley to Hope.⁵ Non-breeding records spread farther through the southern Gulf Islands and along the coast of southeastern Vancouver Island (Sooke to Campbell River). There are extralimital records from Brackendale, the Okanagan Valley, West Kootenay at Trail, Creston, Valemount, and Fort St. John.⁵

In Saskatchewan, one specimen was obtained from Balcarrres in 1910 and another from Aylesbury in 1924.¹² Nine additional records appear in the Atlas of Saskatchewan Birds which describes

Figure 1. North American distribution of the Barn Owl. (Lockshaw 2000)



the Barn Owl as a spring/fall transient and a summer visitant. In August 1995, a Barn Owl was observed in an abandoned barn approximately 16 km northeast of Senlac, Saskatchewan (across the border from Provost, Alberta) (M. Heckbert, pers. comm.).

There are no confirmed records for Barn Owls in Alberta and this bird is not even on the hypothetical list for species in Alberta.⁹ A Barn Owl had been reported at Lethbridge in 1979, however the photo included with the account was of an Eastern Screech-Owl.⁶ Only one hypothetical Alberta record has been reported, from the Cypress Hills in July 1967.¹¹

In the winter of 1999/2000, three confirmed Barn Owl records were submitted to Alberta Sustainable Resource Development, Fish and Wildlife, in Edmonton. The first record to come to our attention was a road-killed specimen recovered in January 2000 on Highway 2, west of Wetaskiwin (52° 58' N, 113° 22' W), which was turned in by wildlife rehabilitator Greta

Millenaar. We examined this owl and found it to be a bird in its first year of life, based on plumage.¹⁰

Jim Whitehouse videotaped and photographed a live Barn Owl (Figure 2) of unknown age and sex roosting in a pole barn located approximately 9 km west of Bashaw (52° 35' N, 112° 58' W). The bird was first detected in mid-December 1999, remained in the area for several weeks, and left with the onset of cold weather in early January 2000. Jim collected several pellets below the owl's perch. Subsequent analysis showed that the bird had consumed at least 11 Meadow Voles (*Microtus pennsylvanicus*) and one unidentified shrew during its stay.

The third Barn Owl was turned in dead to Inglewood Bird Sanctuary in Calgary by Annette Born. She found the bird on January 17, 2000 near a shed on her farm near Langdon Slough, east of Calgary (50° 58' N, 113° 40' W). Like the bird collected near Wetaskiwin, this specimen was sent to the Provincial Museum of Alberta in Edmonton.

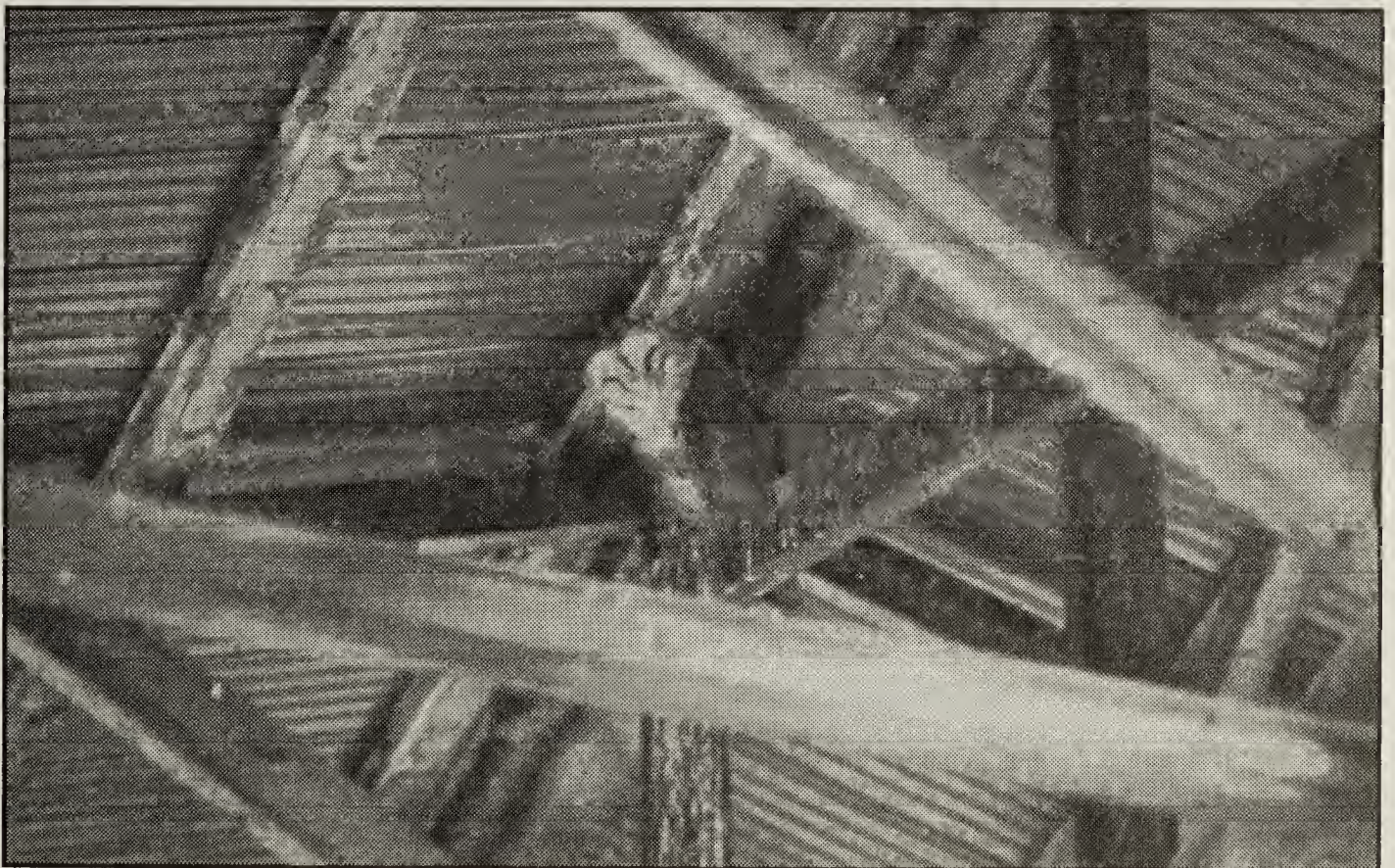


Figure 2. Barn Owl near Bashaw.

Jim Whitehouse

Table 1: Location, date, and observation information on Barn Owls in Alberta.

Date of Record	Location	Observation
January, 2000	Wetaskiwin	*Road killed bird turned in to Fish and Wildlife.
January 4, 2000	Bashaw	Live bird last seen in barn; stills and video footage taken.
January 17, 2000	Langdon	*Dead bird turned in to Inglewood Bird Sanctuary.

* Provincial Museum of Alberta (Edmonton) accession numbers: 200.4.1 and 200.5.1

Long distance movement patterns of Barn Owls have been studied extensively in Europe.⁴ In North America, movements of birds tend to be southerly, and between 300 to 900 km in length.^{3,13,14,15} The early months of the winter of 1999/2000 were some of the warmest on record in Alberta. Quite possibly, these warm conditions encouraged dispersing juvenile barn owls to venture much farther north than normal.

Information requested

We are always looking for new information on locations of owls in the province. If you have records of owl sightings, particularly rare species or unusual locations, please send information on species, date, and location, to lisa.takats@gov.ab.ca or mail to authors' address. All dead birds turned in to Alberta Fish and Wildlife offices should have information included on location and date of collection, so that we may enter the information into the database to track distributions of species.

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Acknowledgements

The authors would like to thank Lynn Vogt (Calgary Field Naturalists), Mark Heckbert (Alberta Environment-High Prairie), and Denver Holt (Owl Research Institute, Montana) for providing information on previous records in and outside the province. Also thanks to Dr. Ken Schmidt for bringing the Bashaw record to our attention, and to Dan Lockshaw for providing the North America range map of the Barn Owl from his website. Finally, thank you to Jocelyn Hudon (Curator of Ornithology, Provincial Museum of Alberta) for providing the museum accession numbers.



LOGGERHEAD SHRIKE LARDER AND PREY

BRIAN JOHNS, Canadian Wildlife Service, 115 Perimeter Road, Saskatoon, SK S7N 0X4 and DAVID JOHNS, 51 Beurling Crescent, Saskatoon, SK S7H 4V6

While conducting a Loggerhead Shrike survey near Kenaston, Saskatchewan on June 28, 2000, we observed a single adult shrike perched on an overhead wire about 50 metres from a clump of Thorny Buffaloberry (*Shepherdia argentea*) (Figure 1). We searched the buffaloberry clump for a nest and discovered three recently fledged young and an empty nest. The remains of a fourth young were discovered in a coyote regurgitate on the

nearby road. The young were estimated to be about 18-19 days of age; they could not fly, but fluttered and hopped on the ground and climbed to the top of a large buffaloberry clump. The nest was 90 cm above the ground in the crotch of several buffaloberry branches. While we searched the area, the second adult came nearby and scolded us.

The buffaloberry clump was in a roadside ditch adjacent to a 3-strand



Figure 1. Nest Shrub with David Johns.
Brian Johns

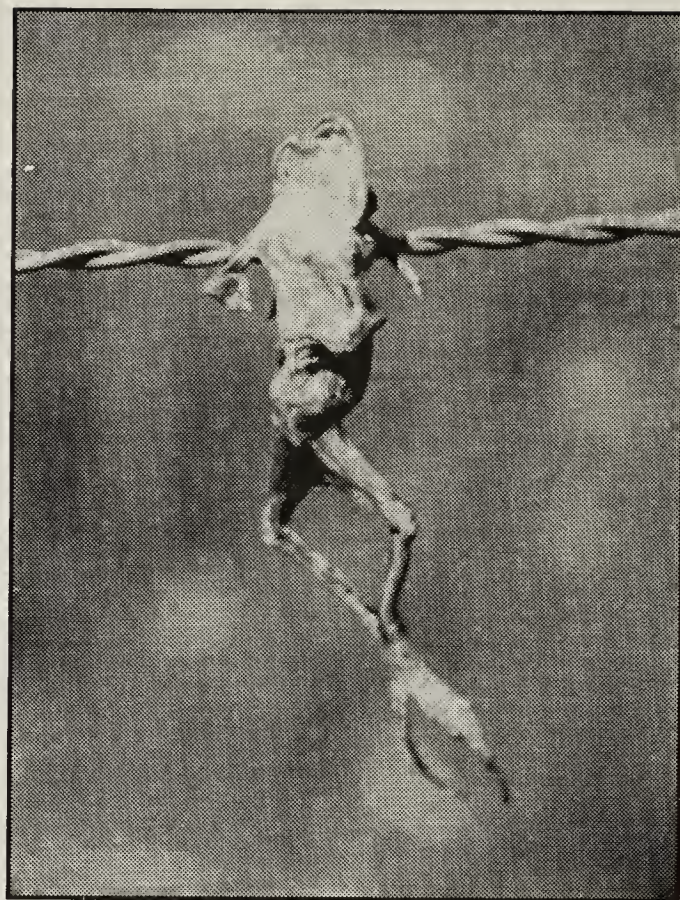


Figure 3. Impaled Wood Frog.
Brian Johns



Figure 2. Impaled Nuttall's Blister Beetle.
Brian Johns

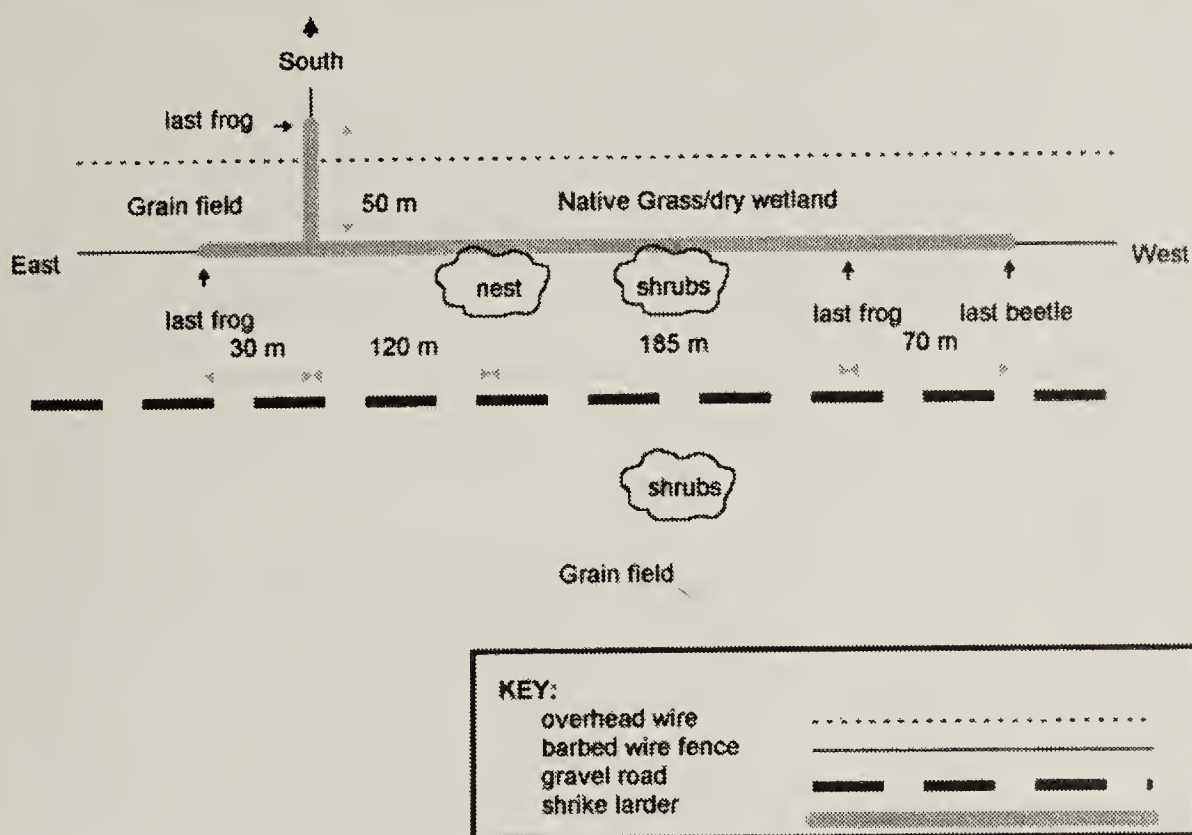
barbed wire fence that enclosed an ungrazed pasture, former cropland, and a dry wetland. We located the following items impaled on the barbs of the fence : 57 frogs and 1 Nuttall's Blister Beetle (*Lytta nuttalli*) (Figure 2.). In the buffaloberry clump, we located another four frogs impaled on buffaloberry thorns. Several of the frogs showed signs of having been fed upon, while others were whole. The frogs were impaled either through the head or the body (Figure 3). The body length

(excluding hind legs) ranged from 25 mm to 45 mm in size. We collected a 32 mm long frog that was later identified as a Wood Frog (*Rana sylvatica*).

On July 12, we revisited the area and observed two adult shrikes and two young near the nest shrubs. We searched the fence west of the location searched on 28 June and discovered the following additional items impaled on barbs: 1 Wood Frog, 19 Nuttall's Blister Beetles and 1 Red Milkweed Beetle (*Tetraopes tetraophthalmus*). At this time we captured one of the adult shrikes and banded it with a USFWS band (8051-97037) on the right leg and a yellow band on the left.

The length of fence used for the larder totaled 455 m: 150 m east, 255 m west and 50 m south of the nest site (Figure 4). The frogs were spread out over 335 m of the east/west fence while the blister beetles were concentrated between 180 and 200 metres west of the nest. In Saskatchewan, blister beetles are

Figure 4. Schematic of Loggerhead Shrike larder, Kenaston SK.



commonly found in Caragana (*Caragana arborescens*) hedges. The nearest Caragana was in a farm yard 730 m west of the nest or about 540 m west of the majority of the impaled beetles.

Our last visit was made to the site on August 8, 2000. We searched all the barbed wire for impaled prey items and discovered that all items were gone except for three frogs. The frogs also were gone from the thorns in the buffaloberry nest bush. The only shrike observed in the vicinity was a single fledged young hunting from a perch on a brush pile about 550 metres west of the nest site. The young shrike was observed catching and eating a Two-striped Grasshopper (*Melanoplus bivittatus*). The shrike dove off its perch, landed next to the brush pile, captured the grasshopper and flew back to its perch. The shrike held the grasshopper horizontally in its bill, then rotated it 90 degrees and swallowed it whole, head first. The bird also was observed chasing

a white butterfly, but failed to catch it. No other shrikes were observed in the vicinity.

Discussion

Yosef lists arthropods and amphibians as prey items of the Loggerhead Shrike in addition to small to medium-sized reptiles, small mammals and birds.⁴ Several different frogs and toads have been recorded in shrike larders including: Blanchard's Cricket Frog (*Ascris crepitans*) and Plains Leopard Frog (*Rana blairi*)³, Pickerel Frog (*Rana palustris*)², Green Tree Frog (*Hyla cinerea*), Squirrel Frog (*Hyla squirella*), Southern Leopard Frog (*Rana spenocephala*) and Eastern Narrow Mouthed Toad (*Gastrophyne carolinensis*).⁵

The high incidence of frogs in this larder is likely a function of hunting perch choice of the adult shrikes. The overhead wire that one of the adults was initially observed on passed over the edge of a dry wetland. From this vantage



Loggerhead Shrike

Henk Kiliaan

point, a shrike could easily observe frogs moving along the margin of the wetland below.

The Eastern Narrow Mouthed Toad is interesting in that it has a chemical defense system that makes it foul tasting to predators. Shrikes have been known to impale other prey items with chemical defenses such as Monarch Butterfly and Lubber Grasshoppers (*Romalea guttata*).⁷ In the wild when shrikes have been observed feeding on Lubber Grasshoppers, which have poison glands in their thorax, the grasshoppers were captured and impaled immediately.⁷ Grasshoppers were aged for 24-48 hours while the toxin degraded, allowing the shrikes to eat the grasshoppers without an adverse reaction. Shrikes readily ate the head and abdomen, but often discarded the poisoned thorax.

In the larder near Kenaston, we discovered prey items that exhibit a means of chemical defense. The Nuttall's Blister Beetle, of which there were a total of 20 impaled on the barbs of the fence, utilizes cantharidin, a bitter, blister forming chemical, to protect it from predators. In this instance, impaled blister beetles were all gone by 8 August and presumably eaten. Fresh blister beetles were not eaten in feeding trials involving captive shrikes⁸, however, in this larder, it appears that blister beetles that had been allowed to cure while cached were utilized in some fashion. Since we made no direct observations of shrikes feeding on blister beetles from the cache, further observation is needed for confirmation.

There are a number of theories as to the purpose of the larder or cache. Applegate observed a female shrike

raiding the larder to feed her nestlings.¹ In addition, while she brooded the nestlings at night, the male raided the larder to feed the brooding female. Yosef and Pinshow found that the size of the larder is used to attract potential mates and is related to the reproductive success of pairs.⁶ Since the larder we found appeared fully stocked after the young had fledged, it is conceivable that Loggerhead Shrike larders may also be used to provide supplemental food for the young while they are learning to hunt on their own.

Acknowledgments

We thank Andy Didiuk and Cedric Gillott for identification of prey items and Phil Taylor for reviewing an earlier draft of this note.

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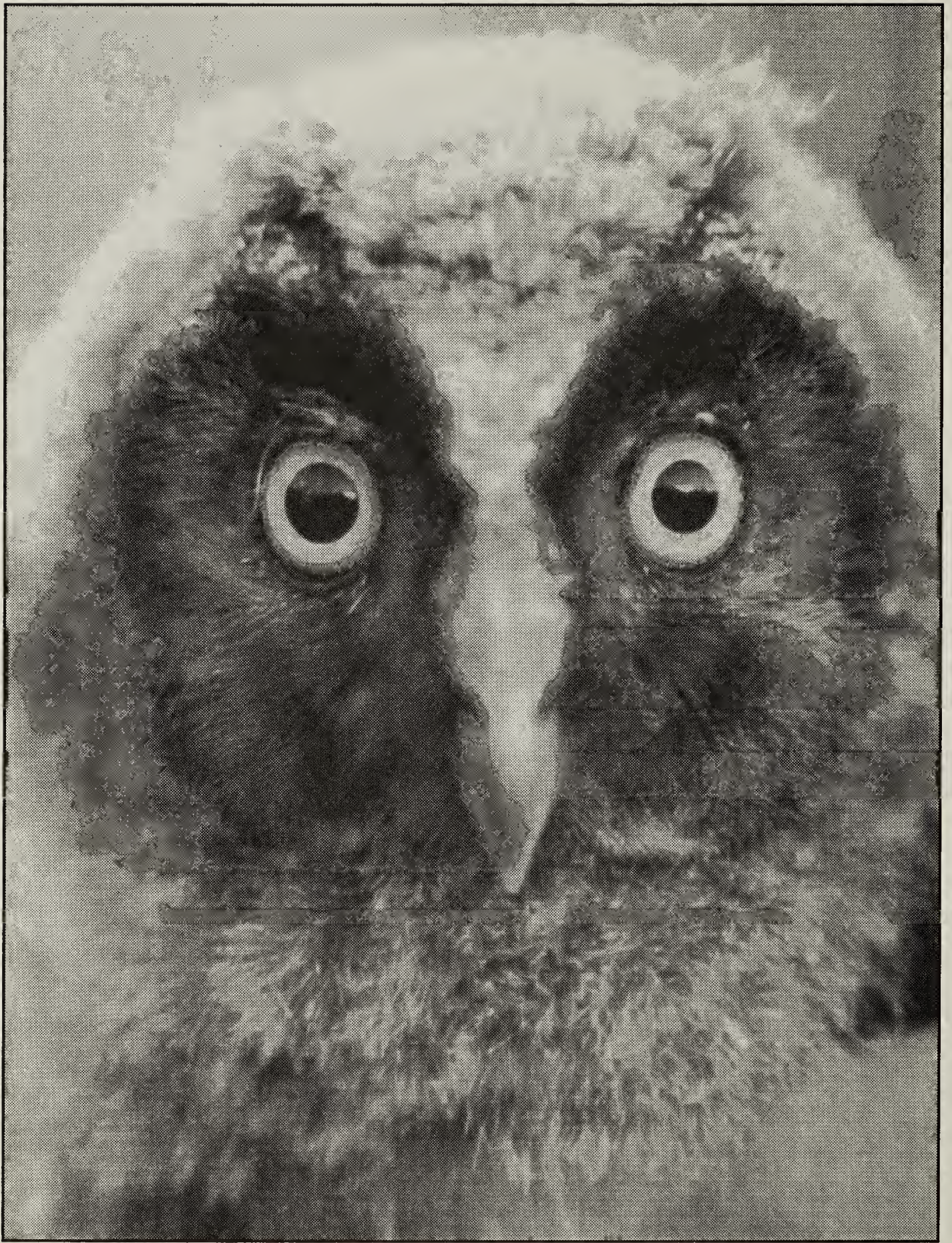


LONG-EARED OWL ABUNDANCE NEAR SASKATOON IN 2000

MARTEN J. STOFFEL, RR#4, Box 183, Saskatoon, SK S7K 3J7

Year 2000 was "the year of the Long-eared Owl." A survey of raptors in a five-mile wide strip that extends eight miles from the north end of Saskatoon to Martensville and Warman (40 square

miles or 182 square km) yielded 34 breeding pairs of Long-eared Owls. Another two pairs were present immediately outside this area, practically "across the road." This number of



Long-eared Owl nestling

Marten Stoffel

breeding pairs, averaging almost one pair per square mile (or per 2.59 km²) is unprecedented for Saskatchewan.

Stuart Houston and I banded 115 young, and Stuart banded another 15 elsewhere in Saskatchewan, breaking the North American record for the

number of nestlings banded in a year (115 in Idaho in 1981; Jeff Marks, pers. comm.). Previous banding of this species in Saskatchewan has been concentrated in two years of previous vole (*Microtus* spp.) peaks: 1960 (73 banded in 18 nests) and 1969 (103 banded in 28 nests).¹

My own interest in Long-eared Owls began as a teenager in Holland, where I assisted banders in finding nests and banding young Barn Owls, Little Owls, and Tawny Owls. Since the Long-eared Owl is relatively rare in Holland, it was a landmark day when I saw my first and only Long-eared Owl nest containing young of banding age in my home country. I resumed my interest in the species in Canada in 1997, when I found three Long-eared Owl nests, each with five young, within what was to become my year 2000 study area. In 1998, I found no nests, but in 1999 there was a single nest with four young. It seems from my five years of study that the number of nests in my study area in average years ranges from zero to three.

The area surveyed is mostly farmland fenced for cattle grazing, but has some untended fields with a good supply of weeds and a fair number of old and new gravel pits surrounded by aspen and willows. It is good habitat for voles and mice (*Peromyscus* spp.), both of which were plentiful throughout the area during the year 2000, and both are known to

be main food sources of the Long-eared Owl.²

The 2000 survey began on May 18, when I found a Long-eared Owl nest with five young, two of them already out of the nest. The last young of the season were found on July 10. All nests had been built previously by American Crows (23 nests, 14 in willows, 9 in aspen) or Black-billed Magpies (9 nests, 7 in willows, 2 in aspen), both plentiful in our area. The most common heights above ground were 7 feet (6 nests) and 8 feet (7 nests), and the highest was only 20 feet. Because the female often did not flush until I approached within ten feet, I learned to check every crow and magpie nest in every bush in the area, approaching from every possible angle, so as not to miss a nesting owl.

The young in the May 18 nest were up to a month earlier in their development than young in most other nests. Unlike Great Horned Owl young, which stay in the nest for six weeks until they can fly, young Long-eared Owls leave their nest and crawl out on



Long-eared Owl nest

Marten Stoffel

branches of the nest tree and adjacent trees, at least two weeks before they can fly.

Twenty-two nests had all the young still in them, but some young had already left from 11 other nests; 25 fledglings from these nests were caught and banded. The nest of origin of these fledglings (with telltale "whitewash" at and beneath the nest) was evident at 8 of these 11 sites; three were not found. At two additional sites, the young were flying well and could not be caught. Only one pair failed to produce any young.

Based on the numbers of young at the 22 nests with all young still present, productivity was 87 young or 4.0 young per successful nest. One pair had six young, five pairs had five young, nine had four young, six had three young and one pair had two young.

When I re-surveyed the same area in 2001, I fully expected to find at least one or two Long-eared Owl nests. To my

surprise, I sighted only a single adult on May 12, saw none thereafter, and failed to find a single nest.

In Europe, Long-eared Owls are known to be cyclical and nomadic, following the four-year cycle of voles. Proof of nomadism in North America would require trapping of adults and then demonstrating that an adult caught and banded in one breeding area, was re-caught while breeding in a widely separated area in a subsequent year. Because there were so many Long-eared Owls here in 2000, and because they raised so many young, I still wonder, in spite of my knowledge of cycles and presumed nomadism, where all those adults and young have gone. One suspects that both the breeding adults and the young which hatched in 2000 have moved to other areas where voles and mice are more plentiful. But where? And where did they all come from in 2000? Perhaps long-term banding efforts will eventually add more pieces to this puzzle.



Long-eared Owl

Brenton Terry

Acknowledgements

I wish to thank Stuart Houston for his instruction and encouragement to a new bird banding subpermittee, and for keyboarding and critiquing this account.

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Banding assistants in the summer of 2000, (from left to right) Pieter Stoffel, Eli-Ann Stoffel and Stephane Gérard. Patrick Leighton

PLANTS

VASCULAR PLANTS OF THE PETURRRSON RAVINE AREA ALONG THE SOUTH SASKATCHEWAN RIVER, IN SASKATOON, SK

VERNON L. HARMS, #212-115 Keevil Crescent, Saskatoon, SK S7N 4P2

Introduction

The Peturrson Ravine area in Saskatoon is a natural landscape feature frequently visited by local naturalists, and one that has been

identified by the Meewasin Valley Authority (MVA) as an area of ecological significance. Found there is a diversity of habitat-associations including spring-fed ravines that are often calcareous to

Figure 1. City of Saskatoon showing location of Peturrson Ravine



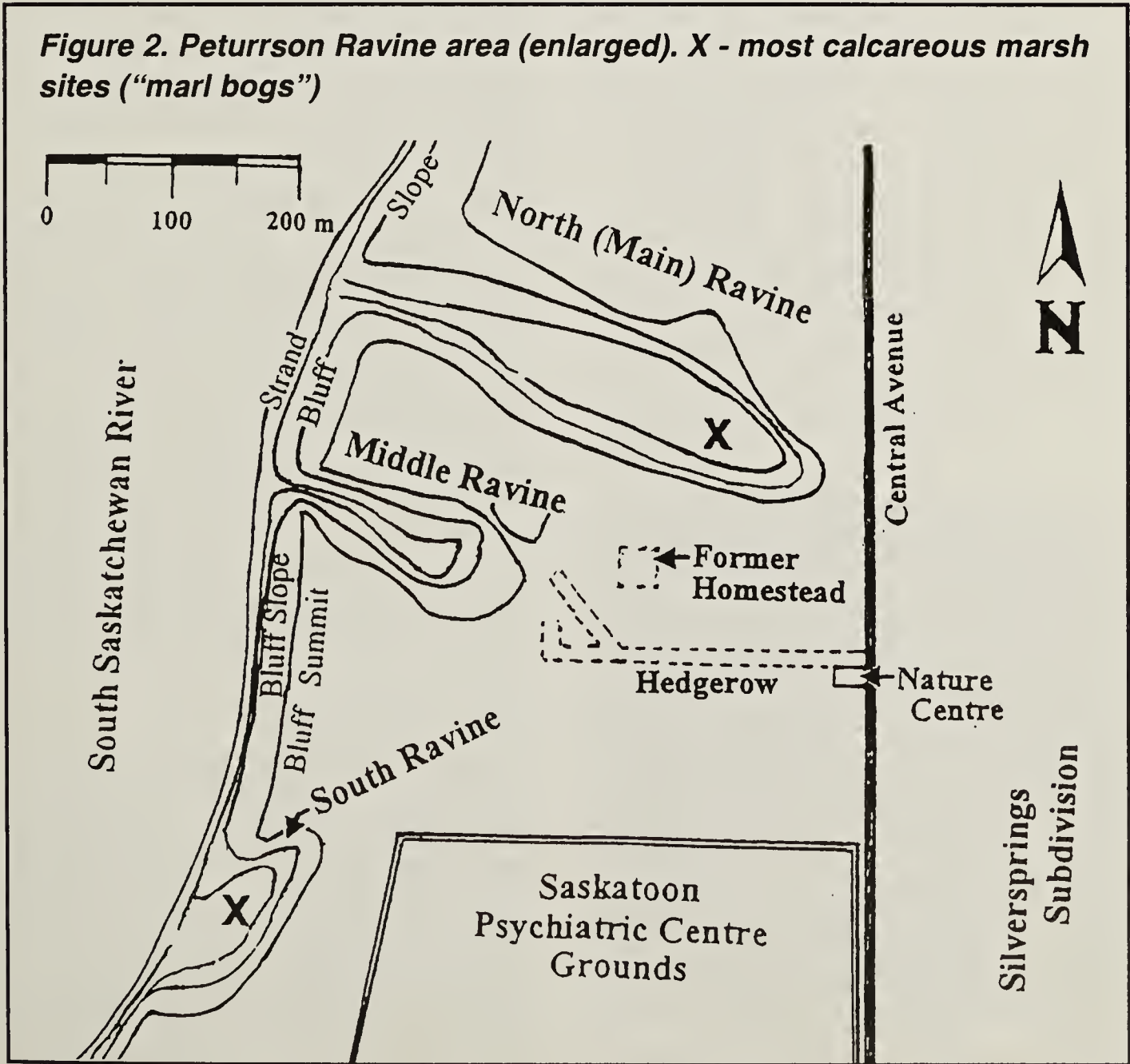
saline, wooded and open ravine and river-bluff slopes, river shores, flood plains, and upland grasslands.

This area is located in northeast Saskatoon, on the east bank of the South Saskatchewan River, north of Sutherland, west of the present Silversprings Subdivision, and just west-northwest of the Regional Psychiatric Centre (see maps, Figures 1 and 2). It is included within the following survey coordinates: LSD 7, 9 & 10 of Sec 11, Twp 37, Rge 5, W 3rd M.

The Peturrson Ravine area is here being taken in a broad sense to include three adjacent tributary ravines respectively referred to as the “Peturrson North Ravine” (= the main

Peturrson Ravine); the “Peturrson Middle Ravine” (= the smaller ravine just south); and the “Peturrson South Ravine” (= the southernmost ravine, just west of the Regional Psychiatric Centre grounds, that was called the “Psychiatric Centre Ravine” by Lineman⁷). The north ravine extends eastward from the river to Central Avenue; its original head was cut off long ago by the construction of this road. For several years, the Saskatoon Nature Society Interpretive Centre has been located on the west side of Central Avenue just south of the ravine head, increasing public access to the area.

All three ravines are primarily spring-fed with groundwater-seepages along their drainages forming a complex of



fen-like to more typical marshes. The calcareous to saline nature of some of these "seeps" is unique in the Saskatoon region, resulting in unusual botanical assemblages with the occurrence of such plants as the three provincial rarities: Red Bulrush (*Blysmus rufus*), Dwarf Bulrush (*Trichophorum pumilum* ssp. *rollandii*) and Marsh Felwort (*Lomatogonium rotatum*).⁴ Together with the Riddell seepage ravine located just off Central Avenue about 1.5 km (about 1 mile) farther north, these constitute the Sutherland "bogs" referred to by the late W. P. Fraser ², John Hudson ⁵ and others. Beaver-dams along the spring-fed ravine drainages have ponded some parts in both the north and middle ravines to create additional aquatic and marsh habitats.

While the wetland seeps and marshes constitute natural features of primary interest for the Peturrson ravine area, other relatively pristine natural plant associations also occur, especially on the floodplains, slopes, and summit-brow of the middle to south ravine, as well as on some wooded and brushy slopes of the north ravine. The ravine slopes are in part wooded by trees or taller shrubs (largely willows, Trembling Aspen, Balsam Poplar, Manitoba Maple, Green Ash, Choke-cherry, Saskatoon-berry and European Buckthorn), in part short-shrubby (mainly Buckbrush, Silverberry, Wood's Wild Rose, and shorter growth of Chokecherry, Fireberry Hawthorn, Saskatoon-berry, European Buckthorn or Red-osier Dogwood), and partially open (i.e. unwooded, and dominated by forbs and grasses). Remnants of relatively pristine upland mixed-grassland exist along the bluff-summit between the middle and south ravines and just south of the southernmost one. Semi-natural upland mixed-grasslands are found south of the Nature Centre and hedgerow to the Regional Psychiatric Centre grounds.

Unfortunately, various quite disturbed stretches of landscape also exist in the overall area, particularly on the river flood plains and open slopes of the north ravine, and most of the bluff-summit uplands except for the sites listed above. An abundance of such exotic species as Smooth Brome, Kentucky Bluegrass, Crested Wheatgrass, Alfalfa, Yellow and White sweet-clover, and Perennial Sow-thistle often characterize open disturbed places, and Perennial Sow-thistle and Canada Thistle are increasingly invading some marshes. The invasive exotic European Buckthorn has become common in some woods and shrublands.

The presence of disturbed sites and exotic plant species is not surprising considering that numerous human tracks and trails traverse the area, that a former homestead existed east of the middle ravine, that cattle-grazing has occurred, that gravel-excavation occurred along the north edge of the north ravine, and that the north ravine and the adjacent area across Central Avenue were used as dumping-grounds (land-fill). A major improvement resulted from a clean-up and restoration of the Peturrson Ravine area undertaken in 1991-92 with the combined efforts of the Meewasin Valley Authority, Saskatoon Nature Society, P.R. Developments Ltd., and other volunteers. A high mesh-fence was installed then to prevent further dumping. Nevertheless, scattered bits of debris may still be encountered.

Acknowledgements

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to have done the original botanizing in the area, although unfortunately he failed to pinpoint his collections beyond labeling them as being from the "Sutherland bogs". Thanks are due to Golder Associates et al ³ for their plant compilations, vegetational analyses and detailed habitat-mapping of the northern part of the study area, and to Luc Delanoy ¹ for the more southern part. Luc also provided the author with valuable and much appreciated information and resource materials for the present article. The careful reviews of this article by John Hudson and Luc Delanoy are much appreciated.

Species List

The previous plant lists were double-checked for accuracy and various prior-listed species have been omitted because of an apparent lack of voucher specimens to document them. Recorded in this list for the Peturrson Ravine area are 371 vascular plant taxa (= 363 species, with eight species having two varieties each in the area). Of these, 317 (or 85.5 %) are native and 54 (or 14.5 %) are exotic (i.e. introduced) plants. Thus the total area, with its variety of habitats, displays a rich floristic diversity. But with 54 exotic plants being recorded here, plus the extensive disturbed sites noted, it is clear that the area as a whole is hardly pristine. Despite the mix of disturbed to relatively natural sites, it is possible for local naturalists to observe a surprisingly high number of over 300 native vascular plant species in the overall Peturrson Ravine area. Species' lists for "natural areas" such as this are unlikely ever to be complete, but should rather be considered to represent a baseline to which observers can add more records.

The plants in the following species' list are alphabetically arranged by scientific names under their respective families, which in turn are ordered

alphabetically. Common names are given in upper-case letters. Introduced (non-native or exotic) plants are indicated by an asterisk (*), with all plants lacking an asterisk being considered native. Names in this listing are updated (modernized) to include most of the name changes associated with the numerous recent taxonomic revisions by authors, especially for the continuing Flora of North America Project and by the Biota of North America Program (BONAP) ⁶, excepting when contradicted by the author's personal knowledge and preferences. Important synonyms are given in square brackets to interconnect (i.e. "peg-down") the modern names with those previously most often used and better known. Newer changes at the generic-level (but not changed species' epithets within a genus) are cross-referenced by bracketed entries in the list. Authorships, valuable for referencing them, are provided for scientific names. The abbreviation "auct." indicates a name previously used by authors but not considered a true synonym. The plant records are mostly documented by specimen-vouchers filed in the W.P. Fraser Herbarium (SASK), University of Saskatchewan, Saskatoon, SK, although some sight-records are documented by vouchers from nearby sites.



Kalm's Lobelia

Anna Leighton

ACERACEAE (Maple Family):

-*Acer negundo* L. var. *interius* (Britt.) Sarg. — MANITOBA MAPLE; BOX-ELDER.

ALISMATACEAE (Water-plantain Family):

-*Alisma triviale* Pursh [*A. plantago-aquatica* L. var. *americanum* Schult. & Schult.] — COMMON WATER-PLANTAIN.

AMARANTHACEAE (Pigweed Family):

-*Amaranthus blitoides* S.Wats. * [*A. graecizans* auct. non L.] — PROSTRATE AMARANTH.

-*Amaranthus retroflexus* L. var. *retroflexus* * — REDROOT PIGWEED.

ANACARDIACEAE (Sumac Family):

[*Rhus radicans* (= *Toxicodendron rydbergii*)].

-*Toxicodendron rydbergii* (Small) Greene [*Rhus radicans* L. var. *rydbergii* Small] — POISON IVY.

APIACEAE (=UMBELLIFERAE) (Parsley Family):

-*Cicuta maculata* L. var. *angustifolium* Hook. [*C. douglasii* (DC.) C. & R.] — WESTERN WATER-HEMLOCK.

-*Heracleum maximum* Bartr. [*H. lanatum* Michx.] — COW PARSNIP.

-*Lomatium foeniculaceum* (Nutt.) C. & R. ssp. *foeniculaceum* [*L. villosum* Raf.] — HAIRY, HAIRY-FRUITED, or FENNEL-LEAVED PARSLEY.

-*Lomatium macrocarpum* (Nutt.) C. & R. — LARGE-FRUITED WILD-PARSLEY or BISCUITROOT.

-*Sanicula marilandica* L. — BLACK SNAKEROOT.

-*Sium suave* Walt. — WATER PARSNIP.

-*Zizia aptera* (Gray) Fern. — HEART-LEAVED MEADOW-PARSNIP or ALEXANDERS.

APOCYNACEAE (Dogbane Family):

-*Apocynum androsaemifolium* L. — SPREADING DOGBANE.

-*Apocynum cannabinum* L. var. *hypericifolium* Gray [*A. sibiricum* Jacq.] — INDIAN HEMP; HEMP DOGBANE.

ARALIACEAE (Ginseng Family):

-*Aralia nudicaulis* L. — WILD SARSAPARILLA.

ASTERACEAE (=COMPOSITAE) (Sunflower Family):

-*Achillea millefolium* L. var. *lanulosa* (Nutt.) Piper — WOOLLY YARROW.

-*Achillea sibirica* Ledeb. — SIBERIAN or MANY-FLOWERED YARROW.

-*Agoseris glauca* (Pursh) Raf. — SMOOTH AGOSERIS; FALSE DANDELION.

-*Antennaria parvifolia* Nutt. — LOW or SMALL-LEAVED PUSSYTOES.

-*Artemisia biennis* Willd. var. *biennis* — BIENNIAL WORMWOOD.

-*Artemisia campestris* L. — TALL PLAINS SAGEWORT or WORMWOOD.

-*Artemisia cana* Pursh — HOARY SAGEBRUSH.

-*Artemisia dracunculus* L. — LINEAR-LEAVED WORMWOOD; DRAGONWORT.

-*Artemisia frigida* Willd. — PASTURE SAGE.

-*Artemisia ludoviciana* Nutt. — PRAIRIE or WHITE SAGE.

[*Aster borealis* (= *Symphotrichum boreale*)].

- [*Aster brachyactis* (= *Symphyotrichum ciliatum*)].
- [*Aster ciliolatus* (= *Symphyotrichum ciliolatum*)].
- [*Aster ericoides* var. *pansus* (= *Symphyotrichum ericoides* var. *pansum*)].
- [*Aster falcatus* (= *Symphyotrichum falcatum*)].
- [*Aster hesperius* (= *Symphyotrichum lanceolatum* var. *hesperium*)].
- [*Aster laevis* var. *geyeri* (= *Symphyotrichum laeve* var. *geyeri*)].
- [*Chrysopsis villosa* (= *Heterotheca villosa*)].
- Cirsium arvense* (L.) Scop. * — CANADA or CREEPING THISTLE.
- Cirsium flodmanii* (Rydb.) Arthur — FLODMAN'S THISTLE.
- Conyza canadensis* (L.) Cronq. [*Erigeron canadensis* L.] — HORSEWEED; CANADA FLEABANE.
- Crepis runcinata* (James) T. & G. — SCAPOSE or DANDELION HAWKSBEARD.
- Crepis tectorum* L. * — NARROW-LEAVED HAWKSBEARD.
- Erigeron asper* Nutt. — ROUGH FLEABANE.
- Erigeron caespitosus* Nutt. — TUFTED FLEABANE.
- [*Erigeron canadensis* (= *Conyza canadensis*)].
- Erigeron lonchophyllus* Hook. — HIRSUTE or SPEAR-LEAVED FLEABANE.
- Erigeron philadelphicus* L. — PHILADELPHIA FLEABANE.
- Erigeron strigosus* Muhl. [*E. ramosus* (Walt.) BSP.; *E. annuus* auct. non (L.) Pers.] — DAISY or PRAIRIE FLEABANE; WHITE-TOP.
- Euthamia graminifolia* (L.) Nutt. [*Solidago graminifolia* (L.) Salisb.] — GRASS-LEAVED or FLAT-TOP GOLDENROD.
- Gaillardia aristata* Pursh — BLANKET-FLOWER; GREAT-FLOWERED GAILLARDIA; BROWN-EYED SUSAN.
- Grindelia squarrosa* (Pursh) Dunal — CURLY-CUP GUMWEED.
- Gutierrezia sarothrae* (Pursh) Britt. & Rusby — COMMON BROOMWEED; BROOM-SNAKEWEED.
- [*Haplopappus nuttallii* (= *Machaeranthera grindelioides*)].
- [*Haplopappus spinulosus* (= *Machaeranthera pinnatifida*)].
- Helenium autumnale* L. — COMMON or FALL SNEEZEWEED.
- Helianthus nuttallii* T. & G. ssp. *nuttallii* [*H. subtuberosus* (Britt.) Britt.] — NUTTALL'S, CLUSTERED, COMMON or TALL SUNFLOWER.
- Helianthus subrhomboides* Rydb — SUBRHOMBIC or BEAUTIFUL SUNFLOWER. [*H. laetiflorus* auct. non Pers.]
- Heterotheca villosa* (Pursh) Shinnars [*Chrysopsis villosa* Pursh] — HAIRY GOLDEN ASTER.
- Hieracium umbellatum* L. — NARROW-LEAVED HAWKWEED.
- Iva axillaris* Pursh — POVERTY-WEED; DEER-ROOT.
- Lactuca pulchella* Pursh [*L. tatarica* (L.) Mey. var. *pulchella* (Pursh) Breit.] — COMMON BLUE LETTUCE.
- Lactuca serriola* L. — LOBED PRICKLY LETTUCE. [*L. scariola* L.].
- Liatris ligulistylis* (A. Nels.) Schum. — MEADOW BLAZING-STAR.
- Liatris punctata* Hook. — DOTTED or PUNCTATE BLAZING-STAR.
- Lygodesmia juncea* (Pursh) D. Don. — RUSH SKELETON-WEED.
- Machaeranthera grindelioides* (Nutt.) Shinnars — TOOTHED IRONPLANT.
- [*Haplopappus nuttallii* T. & G.].
- Machaeranthera pinnatifida* (Hook.) Shin. [*Haplopappus spinulosus* (Pursh) DC.] — SPINY or CUTLEAF IRON PLANT.
- Oligoneuron rigidum* (L.) Small var. *humile* (Porter) Nesom [*Solidago rigida* L.

- var. *humilis* Porter] — STIFF, RIGID, or CORYMBOSE GOLDENROD.
- Packera cana* (Hook.) Weber & Love [*Senecio canus* Hook.] — SILVERY GROUNDSEL.
- Ratibida columnifera* (Nutt.) Woot. & Standl. — LONG-HEADED or YELLOW PRAIRIE CONEFLOWER.
- [*Senecio canus* (= *Packera cana*)].
- Senecio integerrimus* Nutt. var. *integerrimus* — ENTIRE-LEAVED GROUNDSEL or RAGWORT.
- Solidago canadensis* L. var. *canadensis* — CANADA or GRACEFUL GOLDENROD.
- Solidago canadensis* L. var. *gilvocanescens* Rydb. [*S. pruinosa* Greene] — CANADA or CANESCENT GOLDENROD.
- Solidago gigantea* Ait. — LATE or GIANT GOLDENROD.
- Solidago graminifolia* (= *Euthamia graminifolia*).
- Solidago missouriensis* Nutt. — LOW or PRAIRIE GOLDENROD.
- Solidago mollis* Bartl. var. *mollis* — VELVETY or ASHY GOLDENROD.
- Solidago rigida* var. *humilis* (= *Oligoneuron rigidum* var. *humile*).
- Solidago simplex* Kunth var. *simplex* [*S. spathulata* DC. var. *neomexicana* (Gray) Cronq.] — MOUNTAIN GOLDENROD.
- Sonchus arvensis* L. ssp. *uliginosus* (Bieb.) Nyman * [*S. a.* var. *glabrescens* Guenth., Grab. & Wimm.] — PERENNIAL or FIELD SOW-THISTLE.
- Sonchus asper* (L.) Hill * — PRICKLY or SPINY-LEAVED ANNUAL SOW-THISTLE.
- Symphyotrichum boreale* (T. & G.) A. & D. Löve [*Aster borealis* (T. & G.) Prov.; *A. junciformis* Rydb.] — NORTHERN MARSH or BOG ASTER.
- Symphyotrichum ciliatum* (Ledeb.) Nesom [*Aster brachyactis* Blake] — RAYLESS ASTER.
- Symphyotrichum ciliolatum* (Lindl.) A. & D. Löve [*Aster ciliolatus* Lindl.] — LINDLEY'S BLUE ASTER.
- Symphyotrichum ericoides* (L.) Nesom var. *pansum* (Blake) Nesom [*Aster ericoides* L. var. *pansus* (Blake) Boivin] — TUFTED WHITE PRAIRIE ASTER; HEATH or MULTI-FLOWERED ASTER.
- Symphyotrichum falcatum* (Lindl.) Nesom var. *commutatum* (T. & G.) Nesom [*Aster falcatus* Lindl. var. *commutatus* (T. & G.) A. G. Jones] — CREEPING WHITE PRAIRIE or HEATH ASTER.
- Symphyotrichum laeve* (L.) A. & D. Love var. *geyeri* (Gray) Nesom [*Aster laevis* L. var. *geyeri* Gray] — SMOOTH BLUE ASTER.
- Symphyotrichum lanceolatum* (Willd.) Nesom var. *hesperium* (Gray) Nesom [*Aster hesperius* Gray] — WESTERN WILLOW ASTER; RUSH ASTER.
- Tanacetum vulgare* L. * — COMMON TANSY.
- Taraxacum officinale* Weber * — COMMON DANDELION.
- Tragopogon dubius* Scop. * — YELLOW GOAT'S-BEARD.
- Xanthium strumarium* L. — COMMON COCKLEBUR.

BETULACEAE (Birch Family):

- Betula occidentalis* Hook. [*B. fontinalis* Sarg.] — RIVER or WATER BIRCH.
- Betula pumila* L. var. *glandulifera* Regel — SHRUB or SWAMP BIRCH.
- Corylus cornuta* Marsh. — BEAKED HAZELNUT.

BORAGINACEAE (Borage Family):

- Hackelia deflexa* (Wahl.) Opiz. var. *americana* (Gray) Fern.& I.M.Johnston [*H. americana* (Gray) Fern.] – NODDING STICKSEED.
- Hackelia floribunda* (Lehm.) I.M.Johnston – LARGE-FLOWERED STICKSEED.
- Lappula squarrosa* (Retz.) Dum.* [*L. echinata* Gilib.; *L. myosotis* Moench] — BLUEBUR; STICKSEED.
- Lithospermum incisum* Lehm. – NARROW-LEAVED PUCCOON..

BRASSICACEAE (=CRUCIFERAE) (Mustard Family):

- Arabis divaricarpa* A.Nels. — PURPLE ROCK-CRESS.
- Arabis glabra* (L.) Bernh. *? — TOWER MUSTARD.
- Arabis hirsuta* (L.) Scop. var. *pycnocarpa* (Hopk.) Roll. – HIRSUTE or HAIRY ROCK-CRESS.
- Arabis holboellii* Hornem. var. *retrofracta* (Grah.) Rydb. — REFLEXED ROCK-CRESS.
- Descurainia sophia* (L.) Webb * – FLIXWEED; FLIXWEED TANSY-MUSTARD.
- Erysimum asperum* (Nels.) DC. — WESTERN WALLFLOWER or PRAIRIE ROCKET.
- Erysimum inconspicuum* (S.Wats.) MacM. — SMALL-FLOWERED ROCKET or WALLFLOWER.
- Hesperis matronalis* L. * – DAME’S-ROCKET; SWEET ROCKET.
- Lepidium densiflorum* Schrad. – COMMON PEPPERGRASS; PRAIRIE PEPPERWEED.
- Lesquerella arenosa* (Richards.) Rydb. [*L. ludoviciana* (Nutt.) S.Wats. var. *arenosa* (Richards.) S.Wats.] – SAND BLADDERPOD.
- Rorippa palustris* (L.) Bess. – MARSH YELLOW-CRESS
- Sisymbrium loeselii* L.* — TALL HEDGE MUSTARD.
- Thlaspi arvense* L.* — FIELD PENNY-CRESS; STINKWEED.

CAMPANULACEAE (Bluebell Family):

- Campanula rotundifolia* L. — HAREBELL; COMMON BLUEBELL.

CAPRIFOLIACEAE (Honeysuckle Family):

- Lonicera dioica* L. var. *glaucescens* (Rydb.) Butt. — TWINING or LIMBER HONEYSUCKLE.
- Lonicera tatarica* L.* — TARTARIAN HONEYSUCKLE.
- Sambucus racemosa* L. ssp. *pubens* (Michx.) House * – RED ELDERBERRY.
- Symphoricarpos albus* (L.) Blake — NORTHERN or COMMON SNOWBERRY.
- Symphoricarpos occidentalis* Hook. — WESTERN SNOWBERRY; BUCKBRUSH.
- Viburnum edule* (Michx.) Raf. – LOW BUSH-CRANBERRY; MOOSE-BERRY; PEMBINA.
- Viburnum opulus* L. var. *americanum* Ait. – HIGH BUSH-CRANBERRY; PEMBINA.

CARYOPHYLLACEAE (Pink Family):

- [*Arenaria lateriflora* (= *Moehringia lateriflora*)].
- Cerastium arvense* L. — FIELD or PRAIRIE CHICKWEED.
- Gypsophila paniculata* L.* — TALL BABY’S-BREATH.
- Moehringia lateriflora* (L.) Fenzl [*Arenaria lateriflora* L.] — GROVE or BLUNT-

LEAVED SANDWORT.

- Silene cserei* Baumg. — SMOOTH CATCHFLY.
- Silene drummondii* Hook. var. *drummondii* [*Lychnis drummondii* (Hook.) S.Wats.] — DRUMMOND'S COCKLE or CATCH-FLY.
- Silene menziesii* Hook. — MENZIES' CATCHFLY.
- Stellaria crassifolia* Ehrh. — FLESHY STARWORT.

CHENOPODIACEAE (Goosefoot Family):

- Atriplex gardneri* (Moq.) D. Dietr. [*A. nuttallii* auct. non S.Wats.] — GARDNER'S or NUTTALL'S SALTBUSH or ATRIPLEX.
- Atriplex hortensis* L. * — GARDEN ORACHE.
- Atriplex patula* L. — SPREADING SALTBUSH or ORACHE.
- Axyris amaranthoides* L.* — RUSSIAN PIGWEED.
- Chenopodium album* L.* — LAMB'S-QUARTERS; WHITE PIGWEED.
- Chenopodium capitatum* (L.) Ambr. — STRAWBERRY BLITE; STRAWBERRY SPINACH.
- Chenopodium pratericola* Rydb. [*C. leptophyllum* auct. non (Moq.) Nutt.] — NARROW-LEAVED or DESERT GOOSEFOOT.
- Chenopodium salinum* Standl. [*C. glaucum* L. var. *salinum* (Standl.) Boiv.] — SALINE, OAK-LEAF, or SMOOTH GOOSEFOOT..
- Corispermum pacificum* Mosyakin [*C. hyssopifolium* auct. non L.] — BUGSEED.
- Kochia scoparia* (L.) Schrad. * — KOCHIA; BURNING-BUSH; SUMMER-CYPRESS;
- Monolepis nuttalliana* (Schultes) Greene — SPEAR-LEAVED GOOSEFOOT; NUTTALL'S POVERTY-WEED.
- Salsola tragus* L.* [*S. kali* L. ssp. *tenuifolia* Moq.; *S. pestifer* A.Nels.] — RUSSIAN THISTLE; PRAIRIE TUMBLEWEED.

CORNACEAE (Dogwood Family):

- Cornus sericea* L. ssp. *stolonifera* (Michx.) Fosb. [*C. alba* auct. non L.] — RED-OSIER DOGWOOD.

CUPRESSACEAE (Cypress Family):

- Juniperus communis* L. var. *montana* Ait. — COMMON, LOW, or GROUND JUNIPER.
- Juniperus horizontalis* Moench — CREEPING JUNIPER or SAVIN.

CUSCUTACEAE (Dodder Family):

- Cuscuta gronovii* Willd. — COMMON DODDER (parasitic on Canada Goldenrod).

CYPERACEAE (Sedge Family):

- Blysmus rufus* (Huds.) Link [*Scirpus rufus* (Huds.) Schrad.] — RED BULRUSH.
SK Rare: THR.
- Carex aquatilis* Wahl. — WATER SEDGE.
- Carex atherodes* Spreng. — AWNED SEDGE.
- Carex duriuscula* C.A. Mey. [*C. eleocharis* Bailey; *C. stenophylla* Wahl. ssp. *eleocharis* (Bailey) Hultén] — LOW SEDGE.
- Carex filifolia* Nutt. — THREAD-LEAVED SEDGE.
- Carex foenea* Willd. [*C. siccata* Dewey] — HAY or DRY-SPIKE SEDGE.

- Carex inops* Bailey ssp. *heliophila* (Mack.) Crins [*C. pensylvanica* Lam. var. *digyna* Boeckl.] — SUN-LOVING SEDGE.
- Carex lasiocarpa* Ehrh. var. *americana* Fern. [*C. lanuginosa* auct. non Michx.] — WOOLLY SEDGE.
- Carex obtusata* Lilj. — BLUNT SEDGE.
- Carex parryana* Dewey — PARRY'S SEDGE.
- Carex peckii* Howe — PECK'S SEDGE.
- Carex praegracilis* Boott — GRACEFUL SEDGE; CLUSTERED FIELD SEDGE.
- Carex rossii* Boott — ROSS' SEDGE.
- Carex sprengellii* Dewey ex Spreng. — SPRENGEL'S or LONG-BEAKED SEDGE.
- Carex utriculata* Boott — BEAKED SEDGE. [*C. rostrata* auct. non Stokes].
- Eleocharis acicularis* (L.) R. & S. — NEEDLE SPIKE-RUSH.
- Eleocharis palustris* (L.) R. & S. — CREEPING, COMMON or PALE SPIKE-RUSH..
- Eleocharis quinqueflora* (F.Hartm.) Schwarz — FEW-FLOWERED SPIKE-RUSH..
- Schoenoplectus acutus* (Muhl ex Bigel.) A. & D. Love [*Scirpus acutus* Muhl. ex Bigel.] — HARDSTEM or VISCID GREAT BULRUSH.
- Schoenoplectus pungens* (Vahl.) Palla [*Scirpus pungens* Vahl.; *S. americanus* auct. non Pers.] — THREE-SQUARE or AMERICAN BULRUSH.
- Schoenoplectus tabernaemontani* (Gmel.) Palla [*Scirpus validus* Vahl.; *S. americanus* auct. non Pers.] — COMMON or SOFT-STEM GREAT BULRUSH. [*Scirpus acutus* (= *Schoenoplectus acutus*)].
- Scirpus microcarpus* J. & K. Presl. — SMALL-FRUITED BULRUSH.
- [*Scirpus pumilus* ssp. *rollandii* (= *Trichophorum pumilum* ssp. *rollandii*)].
- [*Scirpus pungens* (= *Schoenoplectus pungens*)].
- [*Scirpus rufus* (= *Blysmus rufus*)].
- [*Scirpus validus* (= *Schoenoplectus tabernaemontani*)].
- Trichophorum pumilum* (Vahl.) Schinz. & Thell. ssp. *rollandii* (Fern.) Taylor & MacBr. [*Scirpus pumilus* Vahl. ssp. *rollandii* (Fern.) Raym.] — DWARF BULRUSH. SK Rare: THR.

ELAEAGNACEAE (Oleaster Family):

- Elaeagnus angustifolia* L. * — RUSSIAN OLIVE.
- Elaeagnus commutata* Bernh. ex Rydb. — SILVERBERRY; WOLF-WILLOW.
- Shepherdia argentea* (Pursh) Nutt. — THORNY or SILVERY BUFFALO-BERRY.
- Shepherdia canadensis* (L.) Nutt. — CANADA, LOW or RUSSET BUFFALO-BERRY; SOAPBERRY.

EQUISETACEAE (Horsetail Family):

- Equisetum arvense* L. — COMMON or FIELD HORSETAIL.
- Equisetum hyemale* L. ssp. *affine* (Engelm.) Calder & Taylor — COMMON or TALL SCOURING-RUSH.
- Equisetum laevigatum* A.Br. — SMOOTH SCOURING-RUSH.
- Equisetum palustre* L. — MARSH HORSETAIL.

ERICACEAE (Heath Family):

- Arctostaphylos uva-ursi* (L.) Spreng. — COMMON BEARBERRY; KINNIKINICK.

EUPHORBIACEAE (Spurge Family):

-*Chamaesyce glyptosperma* (Engelm.) Small [= *Euphorbia glyptosperma* Engelm.] — RIB-SEED, RIDGE-SEEDED or PROSTRATE SPURGE.

-*Chamaesyce serpyllifolia* (Pers.) Small ssp. *serpyllifolia* [*Euphorbia serpyllifolia* Pers.] — THYME-LEAVED SPURGE or SAND-MAT.

[*Euphorbia glyptosperma* (= *Chamaesyce glyptosperma*)].

[*Euphorbia serpyllifolia* (= *Chamaesyce serpyllifolia*)].

FABACEAE (=LEGUMINOSAE) (Pea Family):

-*Astragalus adsurgens* Pall. ssp. *robustior* (Hook.) Welsh [*A. striatus* Nutt.] — ASCENDING PURPLE, GROOVED or PRAIRIE MILK-VETCH.

-*Astragalus agrestis* Dougl. ex G.Don [*A. goniatus* Nutt.; *A. dasyglottis* Fisch. ex DC.; — *A. danicus* Retz. var. *dasyglottis* (Fisch. ex DC.) Boiv.] — PURPLE or FIELD MILK-VETCH; COCK'S-HEAD.

-*Astragalus bisulcatus* (Hook.) Gray — TWO-GROOVED MILK-VETCH.

-*Astragalus flexuosus* (Hook.) Dougl. ex G.Don — SLENDER or FLEXILE MILK-VETCH.

-*Astragalus gilviflorus* Sheldon [*A. triphyllus* Pursh] — CUSHION or PLAINS MILK-VETCH.

-*Astragalus missouriensis* Nutt. — MISSOURI MILK-VETCH.

-*Astragalus pectinatus* (Hook.) Dougl. ex G.Don — NARROW-LEAVED or TINE-LEAVED MILK-VETCH.

-*Astragalus tenellus* Pursh — LOOSE-FLOWERED or PULSE MILK-VETCH.

-*Caragana arborescens* Lam.* — SIBERIAN PEA-SHRUB; COMMON CARAGANA.

-*Dalea candida* Willd. var. *candida* [*Petalostemon candidum* (Willd.) Michx.] — WHITE PRAIRIE-CLOVER.

-*Dalea purpurea* Vent. var. *purpurea* [*Petalostemon purpureum* (Vent.) Rydb] — PURPLE PRAIRIE-CLOVER.

-*Glycyrrhiza lepidota* Pursh — AMERICAN or WILD LICORICE.

-*Hedysarum alpinum* L. var. *americanum* Michx. — AMERICAN or ALPINE HEDYSARUM or SWEET-VETCH.

-*Lathyrus ochroleucus* Hook. — CREAM-COLORED VETCHLING or PEA-VINE.

-*Medicago falcata* L.* [*M. sativa* L. ssp. *falcata* (L.) Arc. — YELLOW ALFALFA or LUCERNE.

-*Medicago lupulina* L.* — BLACK MEDICK.

-*Medicago sativa* L.* — ALFALFA; LUCERNE.

-*Melilotus alba* Medic.* — WHITE SWEET-CLOVER.

-*Melilotus officinalis* (L.) Lam.* — YELLOW SWEET-CLOVER.

-*Oxytropis monticola* Gray ssp. *monticola* [*Oxytropis campestris* (L.) DC. var. *gracilis* (A. Nels.) Barn.] — LATE YELLOW or SLENDER LOCOWEED.

-*Oxytropis sericea* Nutt. var. *spicata* (Hook.) Barn. — EARLY YELLOW LOCOWEED.

-*Pediomelum argophyllum* (Pursh) Grimes [*Psoralea argophylla* Pursh] — SILVER-LEAF PSORALEA or SCURF-PEA.

-*Pediomelum esculentum* (Pursh) Rydb. [*Psoralea esculenta* Pursh] — INDIAN BREADROOT; BREADROOT SCURF-PEA; PRAIRIE TURNIP.

[*Petalostemon candidum* (= *Dalea candida*)].

[*Petalostemon purpureum* (= *Dalea purpurea*)].

[*Psoralea argophylla* (= *Pediomelum argophyllum*)].

[*Psoralea esculenta* (= *Pedimelum esculentum*)].

[*Psoralea lanceolata* (= *Psoralidium lanceolatum*)].

-*Psoralidium lanceolatum* (Pursh) Rydb. [*Psoralea lanceolata* Pursh] – LANCE-LEAVED PSORALEA or SCURF-PEA.

-*Thermopsis rhombifolia* (Nutt. ex Pursh) Nutt. ex Richards. — GOLDEN BEAN; YELLOW BUFFALO BEAN.

-*Vicia americana* Muhl. ex Willd. ssp. *americana* — AMERICAN VETCH.

-*Vicia americana* Muhl. ex Willd. ssp. *minor* (Hook.) C.R. Gunn [*V. sparsifolia* Nutt. ex T. & G.] — NARROW-LEAVED AMERICAN VETCH.

-*Vicia cracca* L. ssp. *cracca* * – TUFTED or BIRD VETCH.

FUMARIACEAE (Fumitory Family):

-*Corydalis aurea* Willd. — GOLDEN CORYDALIS.

GENTIANACEAE (Gentian Family):

[*Gentiana crinita* ssp. *macounii* (= *Gentianopsis macounii*)].

-*Gentianopsis macounii* (Holm) Iltis [*Gentiana macounii* Holm.; *Gentianella crinita* (Froel.) G. Don ssp. *macounii* (Holm.) Gillett] — PRAIRIE or MACOUN'S FRINGED GENTIAN.

-*Lomatogonium rotatum* (L.) Fries ex Fern. — MARSH FELWORT. SK Rare:
VUL.

GROSSULARIACEAE (Currant Family):

-*Ribes americanum* P. Mill. – WILD or AMERICAN BLACK CURRANT.

-*Ribes oxycanthoides* L. ssp. *oxycanthoides* – NORTHERN or CANADA GOOSE-BERRY.

IRIDACEAE (Iris Family):

-*Sisyrinchium montanum* Greene — COMMON BLUE-EYED GRASS.

JUNCACEAE (Rush Family):

-*Juncus alpinoarticulatus* Chaix ssp. *nodulosus* (Wahl.) Hämet-Ahti — ALPINE RUSH. [*J. alpinus* Vill. var. *rariflorus* Hartm.].

-*Juncus balticus* Willd. — BALTIC or WIRE RUSH.

-*Juncus bufonius* L. — TOAD or SEASIDE RUSH.

JUNCAGINACEAE (Arrow-grass Family):

-*Triglochin maritima* L. — SEASIDE or SHORE ARROW-GRASS.

-*Triglochin palustre* L. — MARSH or SLENDER ARROW-GRASS.

LAMIACEAE (=LABIATAE) (Mint Family):

-*Lycopus americanus* Muhl. ex Bart. — CUT-LEAVED or AMERICAN WATER-HOREHOUND.

-*Lycopus asper* Greene – ROUGH or WESTERN WATER-HOREHOUND.

-*Mentha arvensis* L. — WILD or FIELD MINT.

LILIACEAE (Lily Family):

-*Allium textile* A. Nels. & Macbr. — PRAIRIE ONION.

-*Asparagus officinalis* L.* – GARDEN ASPARAGUS.

-*Disporum trachycarpum* (S. Wats.) Benth. & Hook. – FAIRYBELLS.

-*Maianthemum stellatum* (L.) Link. [*Smilacina stellata* (L.) Desf.] — STAR-FLOWERED SOLOMON'S-SEAL.

[*Smilacina stellata* (= *Maianthemum stellatum*)].

-*Zygadenus elegans* Pursh — SMOOTH or WHITE CAMAS.

LINACEAE (Flax Family):

-*Linum lewisii* Pursh [*L. perenne* L. ssp. *lewisii* (Pursh) Hult.] — LEWIS' WILD BLUE FLAX.

-*Linum rigidum* Pursh — YELLOW FLAX.

LOBELIACEAE (Lobelia Family):

-*Lobelia kalmii* L. — KALM'S, BROOK or BOG LOBELIA.

MALVACEAE (Mallow Family):

-*Malva rotundifolia* L.* – ROUND-LEAVED or COMMON MALLOW. [*M. pusilla* Sm.].

-*Sphaeralcea coccinea* (Nutt.) Rydb. [*Malvastrum coccineum* (Nutt.) Gray] — SCARLET MALLOW.

NYCTAGINACEAE (Four-o'clock Family):

-*Mirabilis albida* (Walt.) Heim. [*M. hirsuta* (Pursh) MacM.] – HAIRY UMBRELLAWORT or FOUR-O'CLOCK.

OLEACEAE (Olive Family):

-*Fraxinus pennsylvanica* Marsh. — GREEN ASH.

-*Syringa vulgaris* L. * – COMMON LILAC.

ONAGRACEAE (=OENOTHERACEAE) (Evening-Primrose Family):

-*Epilobium ciliatum* Raf. [*E. glandulosum* Lehm. var. *adenocaulon* (Hausk.) Fern.] — NORTHERN WILLOW-HERB.

-*Epilobium leptophyllum* Raf. — NARROW-LEAVED or BOG WILLOW-HERB.

-*Epilobium palustre* L. [*E. lineare* Muhl.] — MARSH WILLOW-HERB.

-*Gaura coccinea* Nutt. ex Pursh — SCARLET GAURA or BUTTERFLY-PLANT.

-*Oenothera biennis* L. — YELLOW or COMMON EVENING-PRIMROSE.

ORCHIDACEAE (Orchid Family):

[*Habenaria hyperborea* (= *Platanthera hyperborea*)].

-*Platanthera hyperborea* (L.) Lindl. [*Habenaria hyperborea* (L.) R.Br. ex Ait.f.] – NORTHERN GREEN BOG ORCHID.

PLANTAGINACEAE (Plantain Family):

-*Plantago eriopoda* Torr. – SALINE or ALKALI PLANTAIN.

-*Plantago major* L. * — COMMON PLANTAIN.

POACEAE (=GRAMINEAE) (Grass Family):

-*Achnatherum hymenoides* (R. & S.) Barkw. – INDIAN RICE-GRASS. [*Oryzopsis hymenoides* (R. & S.) Rich. ex Pip.].

[*X Agrohordeum macounii* (= *X Elyhordeum macounii*)].

[*Agropyron albicans* (= *Elymus albicans*)].

-*Agropyron cristatum* (L.) Gaertn. ssp. *pectinatum* (Bieb.) Tzv. * [*Agropyron* -

pectiniforme R.& S.] — CRESTED WHEATGRASS.

[*Agropyron dasystachyum* var. *dasystachyum* (= *Elymus lanceolatus* var. *lanceolatus*).

[*Agropyron intermedium* (= *Thinopyrum intermedium*)].

[*Agropyron repens* (= *Elymus repens*)].

[*Agropyron smithii* (= *Pascopyrum smithii*)].

[*Agropyron subsecundum* (= *Elymus trachycaulus* ssp. *subsecundus*)].

[*Agropyron trachycaulum* ssp. *trachycaulum* (= *Elymus trachycaulus* ssp. *trachycaulus*)].

[*Agropyron riparium* (= *Elymus lanceolatus* var. *riparius*)].

-*Agrostis scabra* Willd. — ROUGH BENT-GRASS.

-*Agrostis stolonifera* L. — REDTOP; CREEPING BENT.

[*Andropogon scoparius* (= *Schizachyrium scoparium*)].

-*Bouteloua gracilis* (Willd. ex Kunth) Lag. ex Griffiths — BLUE GRAMA-GRASS.

-*Bromus ciliatus* L. — FRINGED BROME.

-*Bromus inermis* Leyss. ssp. *inermis* * — SMOOTH BROME.

-*Bromus tectorum* L. * — DOWNY CHESS or BROME.

-*Calamagrostis canadensis* (Michx.) Beauv. — BLUEJOINT; MARSH REED-GRASS.

-*Calamagrostis montanensis* Scribn. ex Vasey — PLAINS REED-GRASS.

-*Calamagrostis stricta* (Timm) Koel. spp. *inexpansa* (Gray) C.W.Greene [*C. inexpansa* Gray] — NORTHERN REED-GRASS.

-*Calamagrostis stricta* (Timm) Koel. ssp. *stricta* [*C. neglecta* (Ehrh.) Gaertn., Mey.& Scherb.] — NARROW REED-GRASS.

-*Calamovilfa longifolia* (Hook.) Scribn. — SAND-GRASS.

-*Catabrosa aquatica* (L.) Beauv. — BROOK-GRASS.

-*Deschampsia caespitosa* (L.) Beauv. — TUFTED HAIR-GRASS.

-*Distichlis spicata* (L.) Greene var. *stricta* (Torr.) Beetle [*D. stricta* (Torr.) Rydb.] — INLAND SALT GRASS.

-*Echinochloa crusgalli* (L.) Greene var. *crusgalli* * — BARNYARD GRASS.

X *Elyhordeum macounii* (Vasey) Barkw. & Dewey [= *Elymus trachycaulus* X *Hordeum jubatum*; X *Agrohordeum macounii* Vasey]. — MACOUN'S WILD-RYE.

-*Elymus albicans* (Scribn.& Sm.) Dewey [*Agropyron albicans* Scribn.& Sm.] — AWNED NORTHERN WHEAT-GRASS.

-*Elymus canadensis* L. var. *canadensis* — CANADA or NODDING WILD-RYE.

[*Elymus junceus* (= *Psathyrostachys juncea*)].

-*Elymus lanceolatus* (Scribn.& Sm.) Gould var. *lanceolatus* [*Agropyron dasystachyum* (Hook.) Scribn.& Sm. var. *dasystachyum*] — NORTHERN WHEATGRASS.

-*Elymus lanceolatus* (Scribn.& Sm.) Gould var. *riparius* (Scribn. & Sm.) Dorn [*Agropyron riparium* Scribn.& Sm.; *A. dasystachyum* (Hook.) Scribn.& Sm. var. *riparium* (Scribn.& Sm.) Bowden] — STREAMBANK WHEATGRASS.

-*Elymus repens* (L.) Gould * [*Agropyron repens* (L.) Beauv.] — QUACK-GRASS; COUCH-GRASS.

-*Elymus trachycaulus* (Link) Gould & Shin. ssp. *subsecundus* (Link) A.& D.Love [*Agropyron subsecundum* (Link) A.S. Hitchc.; *A. trachycaulum* (Link) Malte ex Lewis var. *unilaterale* (Cass.) Moore] — AWNED WHEATGRASS.

-*Elymus trachycaulus* (Link) Gould & Shin. ssp. *trachycaulus* [*Agropyron trachycaulum* (Link) Malte ex Lewis] — SLENDER or WESTERN WHEATGRASS.

- Festuca altaica* Trin. ssp. *hallii* (Vasey) Harms [*F. hallii* (Vasey) Piper; *F. scabrella* auct. non Torr.] — PLAINS ROUGH FESCUE.
- Festuca saximontana* Rydb. var. *saximontana* [*F. ovina* L. var. *saximontana* (Rydb.) Gl.; *F. ovina* auct. non L.] — ROCKY MOUNTAIN FESCUE.
- Glyceria striata* (Lam.) A.S. Hitchc. — FOWL MANNA-GRASS.
- Helictotrichon hookeri* (Scribn.) Henr. — HOOKER'S OATGRASS.
- Hesperostipa comata* (Trin. & Rupr.) Barkw. [*Stipa comata* Trin. & Rupr.] — NEEDLE-AND-THREAD SPEARGRASS; NEEDLE GRASS.
- Hesperostipa curtiseta* (A.S. Hitchc.) Barkw. [*Stipa curtiseta* (A.S. Hitchc.) Barkw. ; *S. spartea* Trin. var. *curtiseta* A.S. Hitchc.] — WESTERN or SHORT-AWNED NEEDLE-GRASS or PORCUPINE GRASS.
- Hierochloa hirta* (Schrank) Borbas ssp. *arctica* (J. Presl.) Weim. [*H. odorata* auct. non (L.) Beauv.] — NORTHERN SWEET GRASS.
- Hordeum jubatum* L. ssp. *intermedium* Bowden [*H. jubatum* L. var. *caespitosum* (Scribn. ex Pam.) A.S. Hitchc.] — SHORT-AWNED WILD BARLEY.
- Hordeum jubatum* L. ssp. *jubatum* — FOXTAIL or WILD BARLEY.
- Koeleria macrantha* (Ledeb.) Schultes [*K. cristata* auct. non Pers.] — JUNE GRASS.
- Lolium perenne* L. * — PERENNIAL or ENGLISH RYE-GRASS.
- Muhlenbergia cuspidata* (Torr. ex Hook.) Rydb. — PRAIRIE MUHLY.
- Muhlenbergia racemosa* (Michx.) BSP. — MARSH MUHLY.
- Muhlenbergia richardsonis* (Trin.) Rydb. — MAT MUHLY.
- Nassella viridula* (Trin.) Barkw. [*Stipa viridula* Trin.] — GREEN NEEDLE-GRASS.
- Oryzopsis asperifolia* Michx. — WHITE-GRAINED MOUNTAIN-RICE.
- [*Oryzopsis hymenoides* (= *Achnatherum hymenoides*)].
- Pascopyrum smithii* (Rydb.) A. Love — WESTERN WHEAT-GRASS. [*Agropyron smithii* Rydb.].
- Phalaris arundinacea* L. — REED CANARY-GRASS.
- Poa arida* Vasey — PLAINS or PRAIRIE BLUEGRASS.
- Poa compressa* L. * — CANADA or FLAT-STEMMED BLUE-GRASS.
- Poa cusickii* Vasey — EARLY or CUSICK BLUEGRASS.
- Poa palustris* L. — FOWL BLUE-GRASS.
- Poa pratensis* L. * — KENTUCKY BLUEGRASS.
- Poa secunda* Presl. [*P. sandbergii* Vasey] — CURLY, ALKALI, CANBY'S or SANDBERG'S BLUE-GRASS.
- Psathyrostachys juncea* (Fisch.) Nevski * [*Elymus junceus* Fisch.] — RUSSIAN WILD-RYE.
- Puccinellia nuttalliana* (Schultes) A.S. Hitchc. — NUTTALL'S ALKALI-GRASS.
- Schizachne purpurascens* (Torr.) Swall. — PURPLE OAT-GRASS.
- Schizachyrium scoparium* (Michx.) Nash ssp. *scoparium* [*Andropogon scoparius* Michx.] — LITTLE BLUESTEM.
- Spartina gracilis* Trin. — ALKALI CORDGRASS.
- Sphenopholis intermedia* (Rydb.) Rydb. — SLENDER WEDGE-GRASS.
- Sporobolus cryptandrus* (Torr.) Gray — SAND DROPSEED.
- [*Stipa comata* (= *Hesperostipa comata*)].
- [*Stipa curtiseta* (= *Hesperostipa curtiseta*)].
- [*Stipa viridula* (= *Nassella viridula*)].
- Thinopyrum intermedium* (Host) Barkw. & Dewey * [*Agropyron intermedium* (Host) Beauv.] — INTERMEDIATE WHEAT-GRASS.
- Triticum aestivum* L. * — WHEAT.

POLEMONIACEAE (Phlox Family):

-*Collomia linearis* Nutt. — NARROW-LEAVED COLLOMIA.

-*Phlox hoodii* Richards. — MOSS PHLOX.

POLYGONACEAE (Buckwheat Family):

-*Eriogonum flavum* Nutt. — YELLOW UMBRELLA-PLANT.

-*Polygonum achoreum* Blake * [*P. erectum* auct. non L.] — STRIATE or LEATHERY KNOTWEED.

-*Polygonum arenastrum* Jord. ex Boreau. * [*P. aviculare* auct. non L.] — COMMON or YARD KNOT-WEED; DOORWEED.

-*Polygonum amphibium* L. var. *stipulaceum* Coleman — WATER or SWAMP PERSICARIA or SMARTWEED.

-*Polygonum coccineum* Muhl. ex Willd. var. *pratincola* (Greene) Stanford — SWAMP SMARTWEED or PERSICARIA.

-*Polygonum convolvulus* L. * — WILD BUCKWHEAT; BLACK BINDWEED.

-*Polygonum lapathifolium* L. — WILLOW-LEAVED PERSICARIA or SMARTWEED.

-*Rheum rhabarbarum* L. * [*R. rhaponticum* L.] — RHUBARB.

-*Rumex aquaticus* L. var. *fenestratus* (Greene) Dorn [*R. occidentalis* S.Wats.] — WESTERN DOCK.

-*Rumex maritimus* L. ssp. *fueginus* (Phil.) Hultén — GOLDEN DOCK.

-*Rumex pseudonatronatus* Borbas * [*R. fennicus* Murb.] — FIELD DOCK.

-*Rumex stenophyllus* Ledeb. * — NARROW-LEAVED FIELD DOCK.

POTAMOGETONACEAE (Pondweed Family):

-*Potamogeton crispus* L. * — CURLY PONDWEED.

[*Potamogeton filiformis* (= *Stuckenia filiformis*)].

-*Potamogeton foliosus* Raf. ssp. *foliosus* — LEAFY PONDWEED.

[*Potamogeton pectinatus* (= *Stuckenia pectinatus*)].

-*Stuckenia filiformis* (Pers.) Boerner [*Potamogeton filiformis* Pers.] — THREAD-LEAVED PONDWEED.

-*Stuckenia pectinata* (L.) Boerner [*Potamogeton pectinatus*] — SAGO or FENNEL-LEAVED PONDWEED.

PRIMULACEAE (Primrose Family):

-*Androsace septentrionalis* L. ssp. *septentrionalis* — NORTHERN PIGMY-FLOWER; FAIRY CANDELABRUM.

-*Dodecatheon pulchellum* (Raf.) Merr. [*D. pauciflorum* Greene] — BEAUTIFUL or SALINE SHOOTINGSTAR.

-*Glaux maritima* L. — SEA MILKWORT.

-*Lysimachia ciliata* L. — FRINGED YELLOW LOOSESTRIFE

PYROLACEAE (Wintergreen Family):

-*Orthilia secunda* (L.) House [*Pyrola secunda* L.] — ONE-SIDED WINTERGREEN or PYROLA.

RANUNCULACEAE (Buttercup Family):

-*Actaea rubra* (Ait.) Willd. — BANEBERRY.

-*Anemone canadensis* L. — CANADA or MEADOW ANEMONE.

-*Anemone cylindrica* Gray — CANDLE, LONG-HEADED or LONG-FRUITED

ANEMONE.

- Anemone multifida* Poir. – CUT-LEAVED ANEMONE.
[*Anemone patens* (= *Pulsatilla patens*)].
- Pulsatilla patens* (L.) P.Mill. ssp. *multifida* (Pritz.) Zamels [*P. ludoviciana* Hell.; — *Anemone patens* L. var. *wolfgangiana* (Bess.) Koch] – PRAIRIE CROCUS; PASQUE-FLOWER; CROCUS ANEMONE.
- Ranunculus cymbalaria* Pursh — SHORE, SEASIDE or ALKALI BUTTERCUP.
- Ranunculus sceleratus* L. — CELERY-LEAVED or CURSED BUTTERCUP.
- Thalictrum dasycarpum* Fisch. & Ave. – PURPLE or TALL MEADOW-RUE.
- Thalictrum venulosum* Trel. — VEINY or EARLY MEADOW-RUE.

RHAMNACEAE (Buckthorn Family):

- Rhamnus alnifolia* L'Her. – ALDER-LEAVED BUCKTHORN.
- Rhamnus cathartica* L. * – EUROPEAN BUCKTHORN.

ROSACEAE (Rose Family):

- Amelanchier alnifolia* Nutt. – SASKATOON-BERRY; SERVICE-BERRY.
- Argentina anserina* (L.) Rydb. [*Potentilla anserina* L.] – SILVERLEAF; SILVERWEED; SILVER-FEATHER.
- Chamaerhodos erecta* (L.) Bunge ssp. *nuttallii* (Pick. ex Rydb.) Hult. – AMERICAN CHAMAERHODOS; LITTLE GROUND-ROSE.
- Crataegus chrysocarpa* Ashe [*C. rotundifolia* auct. non Moench] — ROUND-LEAVED or FIREBERRY HAWTHORN.
- Fragaria vesca* L. ssp. *americana* (Porter) Staudt – AMERICAN WILD or WOOD STRAWBERRY. [*F. americana* (Porter) Britt.].
- Fragaria virginiana* Duch. ssp. *glauca* (S.Wats.) Staudt — SMOOTH WILD STRAWBERRY.
- Geum aleppicum* Jacq. – YELLOW AVENS.
- Geum triflorum* Pursh — THREE-FLOWERED AVENS; PRAIRIE SMOKE; OLD-MAN'S-WHISKERS.
- Pentaphylloides floribunda* (Pursh) A.Love [*Potentilla fruticosa* auct. non L.] — SHRUBBY CINQUEFOIL.
[*Potentilla anserina* (= *Argentina anserina*)].
- Potentilla arguta* Pursh — WHITE or TALL CINQUEFOIL.
- Potentilla bipinnatifida* Dougl. ex Hook. – PLAINS CINQUEFOIL
[*Potentilla fruticosa* (= *Pentaphylloides floribunda*)].
- Potentilla gracilis* Dougl. ex Hook. – GRACEFUL CINQUEFOIL.
- Potentilla hippiana* Lehm. – WOOLLY or BRANCHED CINQUEFOIL.
- Potentilla pensylvanica* L. — PRAIRIE CINQUEFOIL.
- Prunus pensylvanica* L. f. var. *pensylvanica* – PIN, BIRD or FIRE CHERRY.
- Prunus virginiana* L. var. *virginiana* – COMMON or RED-FRUITED CHOKE CHERRY.
- Prunus virginiana* L. var. *melanocarpa* (A.Nels.) Sarg. – BLACK-FRUITED CHOKE-CHERRY.
- Rosa acicularis* Lindl. ssp. *sayi* (Schwein.) W.H. Lewis — PRICKLY WILD ROSE.
- Rosa arkansana* Porter — LOW PRAIRIE ROSE.
- Rosa woodsii* Lindl. — WOOD'S WILD ROSE.
- Rubus idaeus* L. ssp. *strigosus* (Michx.) Focke – WILD, WESTERN, CANADIAN or AMERICAN RED RASPBERRY.

- Sorbus aucuparia* L. * – EUROPEAN MOUNTAIN-ASH; ROWAN-TREE.
-*Spiraea alba* Du Roi – WHITE or NARROW-LEAVED MEADOWSWEET.

RUBIACEAE (Madder Family):

- Galium boreale* L. — NORTHERN BEDSTRAW.
-*Galium triflorum* Michx. — SWEET-SCENTED or FRAGRANT BEDSTRAW.

SALICACEAE (Willow Family):

- Populus balsamifera* L. — BALSAM or BLACK POPLAR.
-*Populus deltoides* Bartr. ex Marsh. ssp. *monilifera* (Ait.) Eckenw. [*P. d.* var. *occidentalis* Rydb.; *P. sargentii* Dode] – WESTERN or PLAINS COTTONWOOD.
-*Populus tremuloides* Michx. — TREMBLING ASPEN; WHITE POPLAR.
-*Salix bebbiana* Sarg. — BEAKED or GRAY WILLOW.
-*Salix candida* Fluegge ex Willd. — HOARY or SAGE WILLOW.
-*Salix discolor* Muhl. — PUSSY WILLOW.
-*Salix eriocephala* Michx. var. *famelica* Ball [*S. lutea* auct. non Nutt.] — YELLOW WILLOW.
-*Salix exigua* Nutt. ssp. *interior* (Rowlee) Cronq. – SANDBAR, COYOTE, or NARROW-LEAVED WILLOW.
-*Salix petiolaris* Sm. – MEADOW or BASKET WILLOW.
-*Salix planifolia* Pursh – FLAT-LEAF WILLOW.
-*Salix pseudomonticola* Ball [*S. monticola* auct. non Bebb.] – FALSE MOUNTAIN or CHERRY-LEAVED WILLOW.

SANTALACEAE (Sandalwood Family):

- Comandra umbellata* (L.) Nutt. ssp. *umbellata* – COMMON COMANDRA; BASTARD TOADFLAX.
-*Comandra umbellata* (L.) Nutt. ssp. *pallida* (DC.) Piehl — PALE or WESTERN COMANDRA; BASTARD TOADFLAX.

SAXIFRAGACEAE (Saxifrage Family):

- Heuchera richardsonii* R.Br. — RICHARDSON'S ALUMROOT.
-*Parnassia palustris* L. var. *tenuis* Wahl. – MEADOW, NORTHERN, or MARSH GRASS-OF-PARNASSUS.

SCROPHULARIACEAE (Figwort Family):

- Orthocarpus luteus* Nutt. — OWL'S-CLOVER.
-*Penstemon gracilis* Nutt. – LILAC BEARDTONGUE.
-*Penstemon nitidus* Dougl. ex Benth.— SMOOTH BLUE BEARDTONGUE.
-*Veronica scutellata* L. — MARSH or GRASS-LEAVED SPEEDWELL.

SELAGINELLACEAE (Little Clubmoss Family):

- Selaginella densa* Rydb. — PRAIRIE SELAGINELLA or SPIKE-MOSS.

SMILACACEAE (Carrion-flower Family):

- Smilax lasioneuron* Hook. — CARRION-FLOWER.

SOLANACEAE (Nightshade Family):

- Solanum triflorum* Nutt. – WILD TOMATO.

TYPHACEAE (Cattail Family):

-*Typha latifolia* L. — COMMON or BROAD-LEAVED CATTAIL.

ULMACEAE (Elm Family):

-*Ulmus americana* L. * – AMERICAN or WHITE ELM.

-*Ulmus pumila* L. * — MANCHURIAN or SIBERIAN ELM.

URTICACEAE (Nettle Family):

-*Urtica dioica* L. var. *gracilis* (Ait.) Seland. [*U. procera* Muhl. ex Willd.; *U. lyallii* S.Wats.] — COMMON STINGING NETTLE.

VIOLACEAE (Violet Family):

-*Viola adunca* Sm. — EARLY BLUE or HOOKED-SPUR VIOLET.

-*Viola canadensis* L. var. *rugulosa* (Greene) C.L. Hitchc. [*V. rugulosa* Greene] — WESTERN CANADA WHITE VIOLET; TALL WHITE VIOLET.

-*Viola nephrophylla* Greene – NORTHERN BOG VIOLET.

-*Viola vallicola* A.Nels. [*V. nuttallii* Pursh var. *vallicola* (A.Nels.) St.John] — YELLOW PRAIRIE or VALLEY VIOLET.

ZANNICHELLIACEAE (Horned-Pondweed Family):

-*Zannichellia palustris* L. – HORNED-PONDWEED.



Early Blue Violet

Blake Maybank

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3. Golder Associates Ltd., et al 1995. Peturrson's Ravine Management Plan. Report prepared for Meewasin Valley Authority.
4. Harms, V. L. 2000. Rare Native Vascular Plants of Saskatchewan. W.P. Fraser Herbarium, University of Saskatchewan, Saskatoon, SK.
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PEZIZA PROTEANA VAR. *SPARASSOIDES*, AN UNUSUAL FUNGUS FOUND ON A FARM IN FISKE, SK

SUSAN KAMINSKYJ, Department of Biology, University of Saskatchewan,
112 Science Place, Saskatoon, SK S7H 2Z7. Email: Susan.Kaminskyj@usask.ca

In October 2000, Don Graham, who farms near Fiske, Saskatchewan, brought me a cream-coloured specimen of a fungus that looked superficially like a boiled cabbage (Figure 1). The sample weighed more than a kilogram, and had been broken off a much larger mass, probably at least four kilograms. It was not immediately clear what it was, but fortunately Don's wife Shirley had thought to freeze it – this is the best way

to store fungal specimens until they can be preserved – and I was able to examine a piece under a microscope. It turned out to be the fruiting body of a type of ascomycete (a group that bears its spores in sacs called asci; Figure 2).

After discussing Don's find with experts in Edmonton, Prince George BC, and Georgia (USA), the fungus was identified as *Peziza proteana* variety

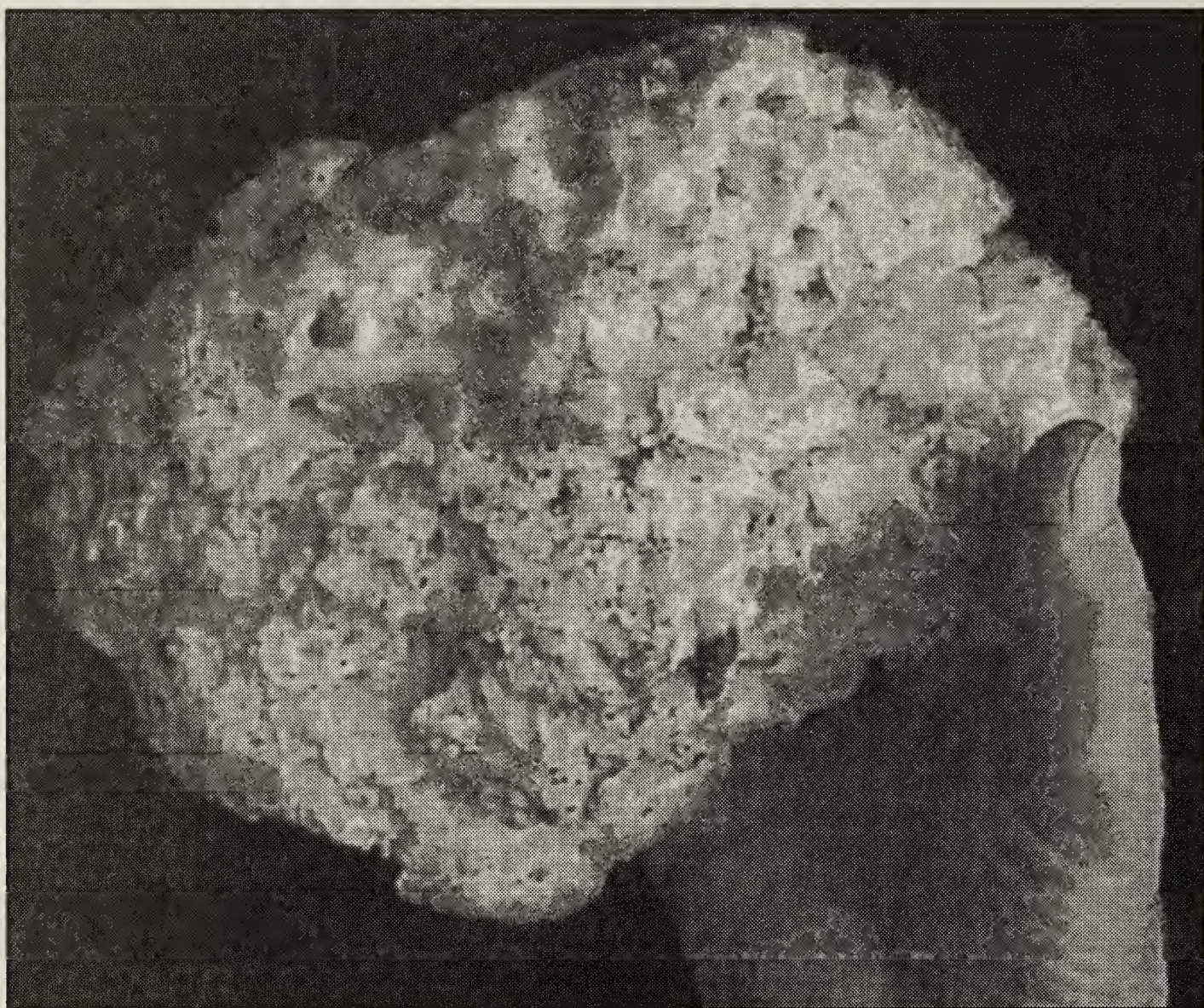


Figure 1. *Peziza proteana* var. *sparassoides* fruiting body

Dennis Dyck

sparassoides. Decoded, this name tells us quite a bit about the fungus: *Peziza* has cylindrical asci with starch in their tips (arrows in Figure 3); *proteana* means large fruiting body without a definite shape; *sparassoides* means resembling a type of basidiomycete called *Sparassis*. Indeed, *Sparassis* is sometimes called the cauliflower mushroom because of its shape and texture. Descriptive papers in the fungal literature, and a book containing descriptions of this species are available in the main library at the University of Saskatchewan.^{1, 4, 8}

The story of where and how this fruiting body grew and was discovered is interesting, and characteristic of the species. In 1998, Don had plowed a Caragana / Manchurian Elm (*Caragana arborescens* / *Ulmus pumila*) hedgerow

to control the elms that were spreading into his wheat fields. In the summer of 1999, he burned the 16 large piles of brush, creating fires so hot that they made clinkers in the soil. Later he partly buried the debris. The summer of 2000 was unusually wet (giant puffballs, genus *Calvatia*, were relatively common on his farm that year) and the *P. proteana* var. *sparassoides* was found fruiting within several of the loose piles of half buried, charred wood.

This specimen is interesting for several reasons. This is the first report of *P. proteana* var. *sparassoides* from Saskatchewan.^{2, 3} Surprisingly, this species was not listed in a general North American ascomycete key, although it was in a key to Pacific Coast species.^{4, 5, 6, 7} There are few large ascomycete species, and no others



Figure 2. Freehand section across one of the lobes of the fruiting body. The surface has a layer (square bracket) of cylindrical, eight-spored asci (arrow). Bar = 0.1 mm.

Susan Kaminskyj

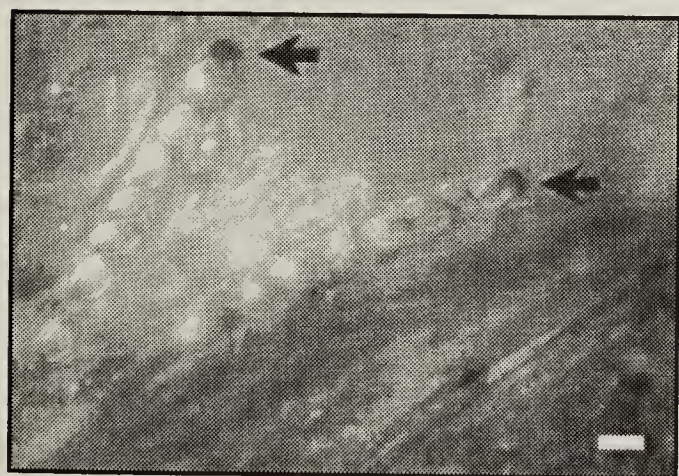


Figure 3. Asci stained with iodine have dark blue tips (arrow), indicating a high starch content. Bar = 10 micrometres

Susan Kaminskyj

even a tenth this massive. Most ascomycete fruiting bodies are shaped like small cups, 0.5 - 5 cm in diameter. Morels are relatively large ascomycetes

(up to about 15 cm tall) that superficially resemble mushrooms with "caps" of fused cups, but their fruiting bodies are hollow and very light. *P. proteana* var. *sparassoides* is large and solid and heavy, with a convoluted surface of solid lobes. On the piece shown in Fig. 1, there was no differentiation into spore-bearing and support structures.

Some fungi grow preferentially on burned wood, including those called the "postfire ascomycetes", which could be important for helping to recycle trees after forest fires.⁹ *P. proteana* var. *sparassoides* must have been locally abundant in the soil for several of the burnt wood piles to be colonized, although the fire was probably sufficiently hot and long-lasting to have

sterilized the soil at the immediate burn site. Given the current dry summer and all-too-frequent forest fires, the next year or so could be very good for finding this unusual species.

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“Plover’s origins are in the Latin *pluvia*, ‘rain’. Most authorities agree on a hypothetical Latin form *pluvarius* for ‘rain-bird’, which gave rise to the Old French *plovier*, from which the English is derived. There are a number of myths about these shorebirds which suggest that they are easier to capture in the rain, or that their appearance heralds the rainy season. None of these is true.”

Edward S. Gruson, *Words for Birds* :
A Lexicon of North American Birds with Biographical Notes. (p. 96)

ADDITIONAL SASKATCHEWAN SPHINX MOTH RECORDS

RONALD R. HOOPER, Box 757, Fort Qu'Appelle, SK S0G 1S0

Since listing the sphinx moths of Saskatchewan in 1987, a number of interesting discoveries have been made, including two new species for the province.¹ This brings the present provincial list to 25 species.

Slender Clearwing, *Hemaris gracilis* (G. & R.) Figure 1.

On June 14, 1989, I collected one specimen of this species west of Ile-à-la-Crosse, SK, as a day flier in mixed forest at Labrador Tea (*Ledum groenlandicum*) blossoms. On June 13, 1992, John Kozial collected two

specimens at mile 13 of the Fir River Road northwest of Hudson Bay, SK. This species was previously reported west to Victoria Beach, MB. It is reported to feed on blueberries.

It closely resembles the Hummingbird Clearwing, *Hemaris thysbe* (Fab.) (see front cover), but the enclosed cell inwards from the middle of the forewing lacks a scaled vein crossing it. There is a reddish-brown line on the underside of the thorax on each side near the bases of the wings. On the underside of each hind wing, there is a yellow patch below the transparent areas.

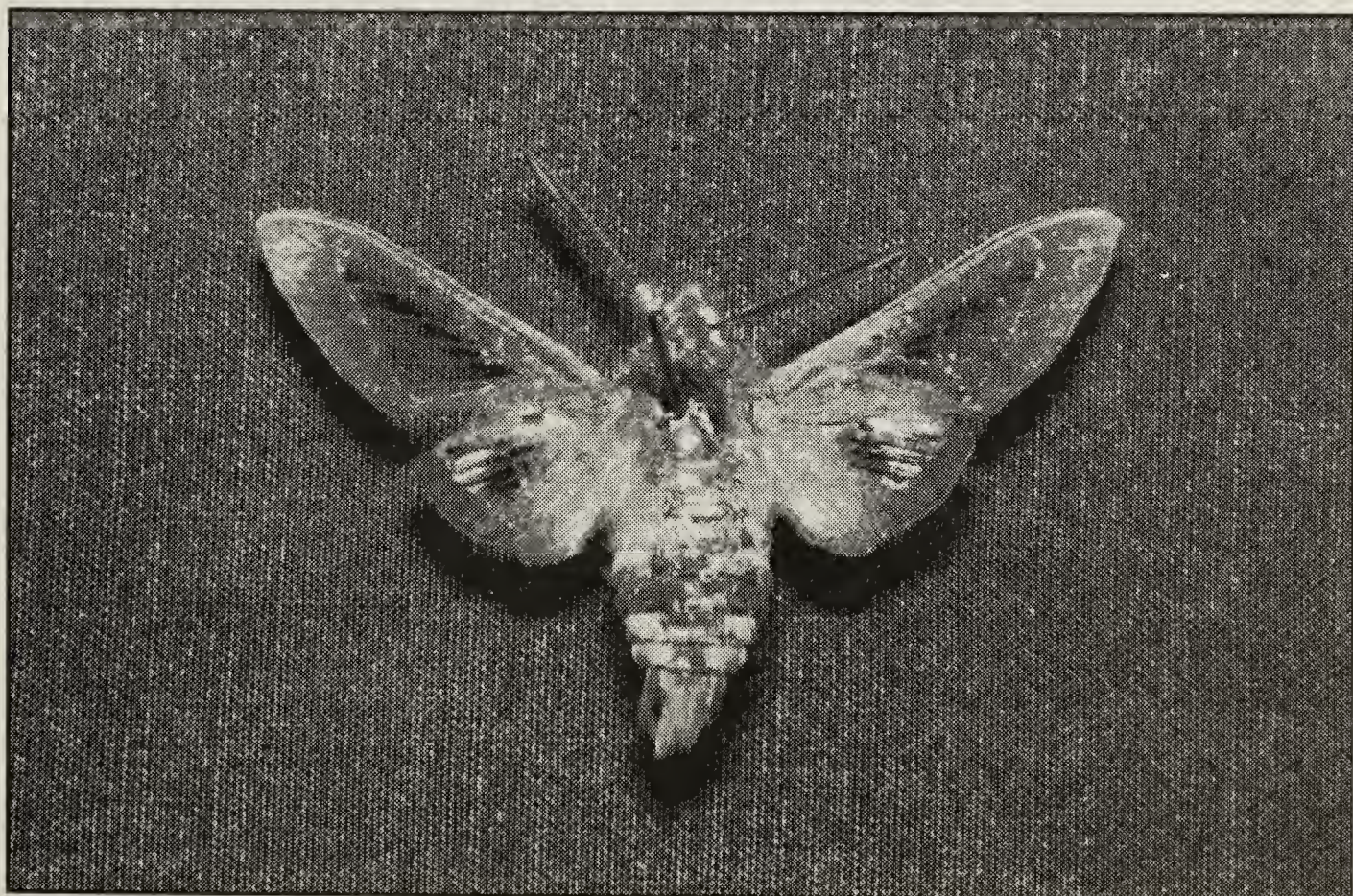


Figure 1. Slender Clearwing collected at Ile-à-la-Crosse, SK on 14 June 1989.
John Triffo

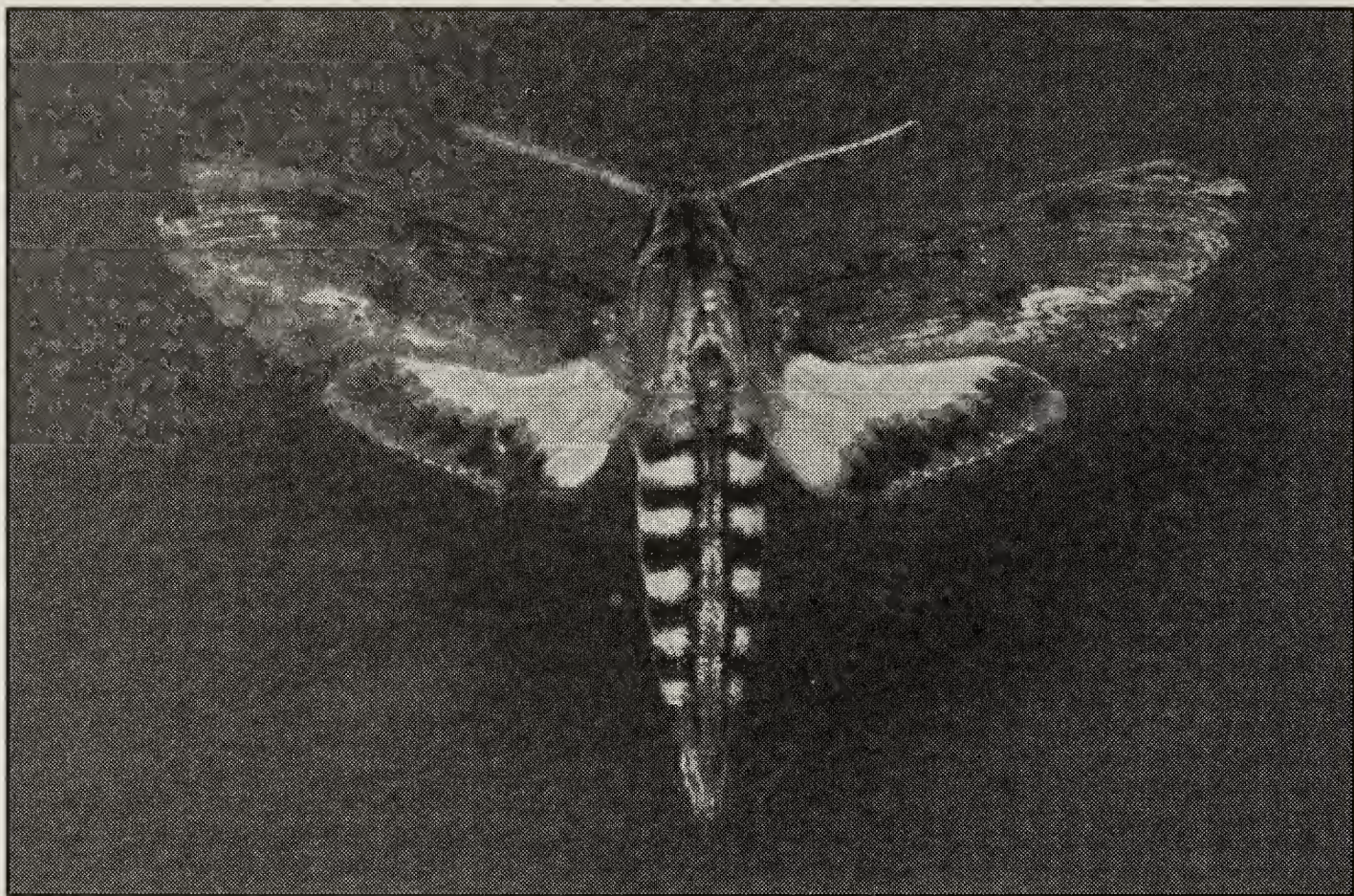


Figure 2. Alope Sphinx, stray in porch, Bjorkdale, SK, 8 August 2000.
Wingspan 9.5 cm, body length 5.5 cm. **John Kozial**

Alope Sphinx, *Erinnyis alope* (Drury)
 Figure 2.

On August 8, 2000, John Kozial from north of Bjorkdale, SK, had a great surprise. He found a specimen of Alope Sphinx roosting on the ceiling of his porch during the daytime. This is the first record of this species for Canada. This tropical species normally ranges north to Arizona and Florida, but it has strayed north to Kansas and New Jersey. Although the Bjorkdale specimen had strayed far, it was in good condition except for signs of wear on the outer edges of the forewings. The moth is blackish-brown on the forewings. The hind wings are yellowish-orange basally and are banded with black outwardly.

This species could probably not produce a brood here as its food plants, Papaya (*Carica papaya*) and Allamanda (*Allamanda* spp), do not grow in Canada. Two other species of the genus *Erinnyis* have strayed north into Ontario.

Gaudy Sphinx, *Eumorpha labruscae* (L.) Figure 3.

This tropical moth is very rare in the Prairie Provinces. It was collected near Lancer, SK in October, 1934 by D. Micholson. The specimen is at the Canada Agriculture Research Station in Saskatoon. Charles Covell Jr. reports it for Manitoba in *A Field Guide to the Moths of Eastern North America*.

The Gaudy Sphinx is normally found north to Florida and Texas. From there it sometimes strays northward to Maine, Michigan, Manitoba and Saskatchewan. The food plants are reported to be three members of the grape family, Ampelopsis (*Ampelopsis* sp.), Cissus (*Cissus* sp.) and grape (*Vitis* spp) and a composite, Christmasbush Eupatorium (*Eupatorium odoratum*). As none of these plants is known in the wild in Saskatchewan, it was assumed that any Saskatchewan specimen would be



Figure 3. Gaudy Sphinx, emerged 30 October 1999, Regina, SK

John Triffo

a stray and not have developed locally from a caterpillar.

On September 4, 1999, Bill Goodhand found a large, interesting caterpillar (Figure 4) in Regina, SK on planted Virginia Creeper (*Parthenocissus* species, also in the grape family). It was a combination of shades of brown and cream gray. On the third segment near the front there was a pair of false eyespots. When disturbed, the caterpillar withdrew the first two segments into the third and these eyespots made it look dangerously snake-like. The caterpillar has a slender horn near the rear as Sphinx moth larvae normally have, but during its last instar, this horn is replaced by a round spot with a dark centre. Mr. Goodhand brought the caterpillar to Keith Roney, Curator of Life Sciences at the Royal Saskatchewan Museum, who placed the caterpillar in a jar containing soil. The caterpillar pupated in the soil on

September 18. On October 30, 1999, the adult moth emerged (unfortunately Keith was away and the wing tips were damaged). The adult moth had a greenish-gray body and forewings and purple hindwings with a red line. There was a row of silver spots on each side of the abdomen.

A second Gaudy Sphinx caterpillar was found in the same area but it did not make it through to the adult stage. These specimens prove that Gaudy Sphinx is capable of straying to Canada and producing a brood on Virginia Creeper.

Here are some changes to the previously reported ranges of Saskatchewan sphinx moths.

Laurel Sphinx, *Sphinx kalmiae* J. E. Smith

This species has now been taken at Indian Head, Crooked Lake, Whitebear Resort (north of Carlyle) and Armit.



Figure 4. Gaudy Sphinx caterpillar

Keith Roney

Gordian Sphinx, *Sphinx gordius* Cram.

Now known to occur south to Bjorkdale SK (not to Fort Qu'Appelle).

Clemen's Hawkmoth, *Sphinx luscitiosa* Clem.

Now known to range as far south as Fort Qu'Appelle.

Striped Morning Sphinx, *Hyles lineata* (F.) (See photograph, p. 174)

Now known to range north to Somme.

Tomato Hornworm, *Manduca quinquemaculata* (Haw.)

Alvera Galloway found a larva of this species on her tomatoes in Regina on 2 August 2001. She brought it to Keith Roney at the Royal Saskatchewan Museum (RSM). It pupated the next day and the adult emerged on 30 August. This is the first Saskatchewan specimen for the museum.

Spurge Hawkmoth, *Hyles euphorbiae* (L.)

Renee Sherratt found several

caterpillars of this species on Leafy Spurge (*Euphorbia esula*) at Alta Vista Beach, at the south end of Last Mountain Lake. Two were brought to the RSM on 29 August 2001 and one pupated on 1 September 2001. Since this species was introduced into Saskatchewan to control Leafy Spurge, from 1966 to 1985, it was not known if it was still extant until this recent find. These individuals could be descendants of the Saskatchewan introductions, or they could have spread here from Alberta, Montana or North Dakota, where they are now established.

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NOTES AND LETTERS

ACCIPITER INTERACTION

During the course of spring banding on 17 May 2000, nature had advised me that it was time to rise at 5:15 AM. When I looked out the front window of our motorhome, I could see considerable commotion going on by one of the nets set up in front of our camp in a lane between willows. I made a dash to intervene, and found myself within two metres, and a few seconds, of catching a Cooper's Hawk which had just killed a small, male Sharp-shinned Hawk. The Sharp-shin was caught in the hawk net which had been left in the

'down' position to catch a Long-eared Owl in the area.

A comment in the fall 2000 *Black and White Warbler News*, the newsletter of the Last Mountain Bird Observatory (LMBO), prompted me to write this note. It reads, "LMBO's first sighting of a Northern Goshawk occurred on August 28 when one was observed by Steve Van Wilgenberg and Enid Cumming with prey in its talons. When flushed, the Goshawk left its kill. It turned out to be a Sharp-shinned Hawk – certainly what seems to be unusual fare for this species!"



Adult Northern Goshawk, the largest of the three accipiters in Canada.

Edgar T. Jones



An adult Cooper's Hawk, the middle-sized accipiter.

Edgar T. Jones



Sharp-shinned Hawk, the accipiter most likely to be observed as it tends to work the edges of brushy areas, along which sparrows and warblers migrate.

Edgar T. Jones

A couple years ago, Erhard (Hardy) Pletz, who has been banding hawks and owls for about 20 years, told me about a Cooper's Hawk nest, in which he found three adult-sized legs and feet of a Sharp-shinned Hawk. All this clearly

indicates that accipiters are quick to take advantage of an 'easy meal' even though it is one of their own kind.

We have only three species of accipiters in Canada. The females of all

three species are larger than the males, and a large female Sharp-shinned Hawk can be mistaken for a small male Cooper's. The rounded tail of the Cooper's, if it can be seen, is the feature that distinguishes it from the square-tailed Sharp-shin. All three species nest in thick brushy areas of mixed woods. They might be best described as short-winged, long-tailed bush hawks. Accipiters can be expected to decline if mass destruction of this type of habitat continues cross the country.

- *Edgar T. Jones*, 119 - 215 Blackburn Drive, E., SW., Edmonton, AB T6W 1B9

KESTRELS THINKING 'OUTSIDE THE BOX'

I am ashamed to tell the following story, but to not do so would be a disservice to the kestrels. On June 21, 2001 while checking an American Kestrel nest box, I put a rag in the entrance hole, thinking that I might capture an adult. On opening the door, which was on the west side, there were no adults, just five young too small to band. I closed the door and walked away, not thinking to pull out the rag in the entrance, which was on the east side of the box.

On July 1, I went back to band the young and to my horror, saw that the



Young Kestrel

Brenton Terry

entrance was still plugged. I opened the door, expecting to see five dead birds, but to my surprise, four healthy birds greeted me. One had perished and only a dry skeleton remained. On the side of the bird house, which was made from 1" lumber, there is a knothole, 3/4" in size. This was stained from the parents pushing bits of food in. There was also a spot worn down to new wood where the parents had clung to the box while feeding the young. On July 8, these young were flying. My only defence is forgetfulness, but this shows that birds do not act on instinct alone.

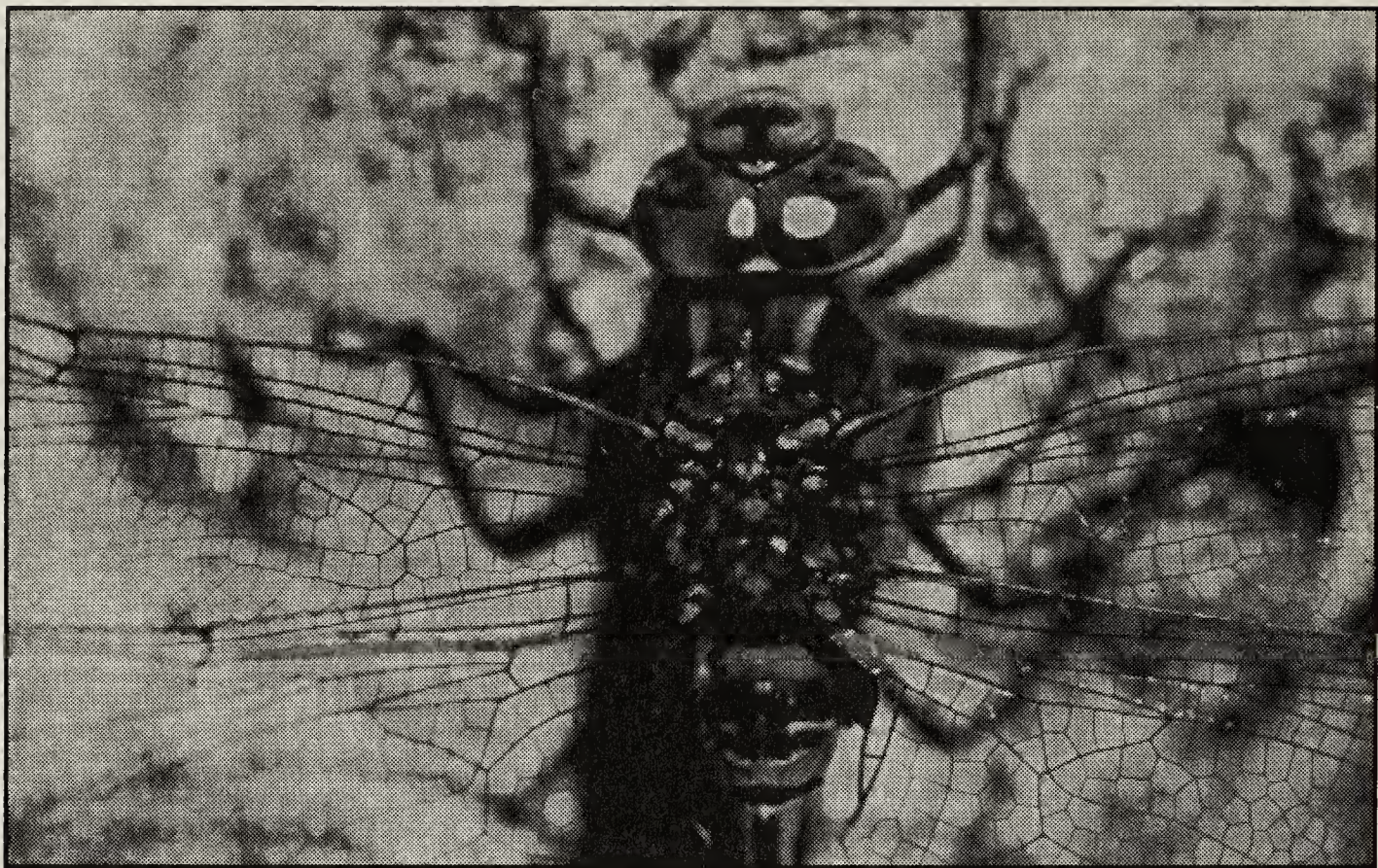
- *Sig Jordheim*, Box 544, Kyle, SK S0L 1T0

AN EARLY SUMMER ENCOUNTER

As a dragonfly darted past us on the shore of Candle Lake, a friend asked me: "Is it true that dragonflies sew up your mouth? My mother used to call them 'devil's darning needles'."

We both laughed. At that moment, I spied a soaking wet dragonfly lying upside down where the sand meets the water. Its beautiful blue eyes still had life. I noticed that as well as being wet, the dragonfly was encased in fluff from the aspen seeds that were everywhere. The pathetic dragonfly had its feet all wound up with white fibre. Its head, which used to be so mobile, was still, with threads of the aspen caught around it.

It had no energy left. It could no longer struggle to free itself, so I began to remove the fluff, one strand at a time. Soon its feet were free. The strands binding its head were harder to release. It had such a small "neck" holding its head to the body that I was afraid I would decapitate it.



Dragonfly

Juhachi Asai

Finally I freed the dragonfly and set it in a sunny spot where it could dry off. The sun's rays would give it energy to fly and become the 'devils darning needle' again – but only mosquitoes believe that tale.

- Betty Arthur, 2321 Albert Avenue, Saskatoon, SK S7J 1K3

BRACONID WASPS

[This letter is a response to the answer to the March Mystery Photo published in the June issue.] Entomologists call such wasps "parasitic", but many biologists would object to this, since the outcome of the relationship is always death of the host (admittedly sometimes after the emergence of the developed "parasites", either as adults or terminal larvae to form external pupae). I once studied Parasitology, and most of us then defined a "parasite" as an organism which lives in or on a different species of organism and "harms" it, usually without actually killing the host. The

harm is often slight enough that it is simply inferred. Therefore I would call a braconid wasp a predator.

Such definitions are full of problems concerning what is known or not known about specific examples, and what is the right host vs. the wrong host (the latter are often hurt much more than the former), but conceptually these categories are important.

I also have problems with claiming that braconids and other "parasitic" wasps are "beneficial", since most of them attack specific esoteric host species which are probably not "pests" in any sense, or at least are "pests" that do not require any "fix" by us meddling humans.

- Jim Wolford, Site 1, Comp. 61, RR3, Wolfville, N.S. B0P 1X0

SHOVELING FUEL FOR A RUNAWAY TRAIN.

BRIAN CZECH. 2000. University of California Press, Berkeley. 210 pp. Hard cover \$ 34.95 ISBN 0-520-22508-2. Available from the Nature Saskatchewan Bookshop.

This is an interesting and certainly topical book. The runaway train is a metaphor for continued economic growth that will lead to ecological disaster. The book begins with the Prologue, followed by Part One (The Runaway Train) and Part Two (Stopping the Train) with five chapters each, and ends with Conclusions. There is also a bibliography and an index, each 13 pages. The intent of the book is to alert readers to the fallacy of today's economic theory which advocates an annually increasing gross national product as a desirable goal, and to suggest ways to stop this fateful growth.

Brian Czech is a conservation biologist with the U.S. Fish and Wildlife Service, Division of Refuges. In the **Prologue**, he describes his encounter with the American mega-economy such as the proliferation of highways, clear-cut logging, wasteful fishing in the Bering Sea and the decrease of wilderness.

Using quotes, references and statistics, Brian Czech shows very clearly in **Part One** how the American public, its government and academia glorify economic growth. Sixty-three percent of Americans are convinced that there are no limits to growth. This view is very persistent despite evidence to the contrary. For instance, even though most oceanic fisheries were already in decline, Julian Simon, professor of

business administration at the University of Maryland proclaimed "the infinitude of natural resources" in his book "Ultimate Resource 2" published in 1996. It is believed that resources may be substituted, such as solar energy for fossil fuels, capital for labor, and that human intelligence (education and knowledge) can increase indefinitely. Czech shows that laws of physics set limits to economic growth. For example, the more solar energy is captured and used, the more heat is produced on earth. In the U.S., 40% more fossil energy is used than the total amount of solar energy captured by vegetation.

Just as it was very difficult to overcome Ptolemy's view of the world, so it takes a revolution in economic theory to incorporate limits to economic growth into our prevailing economic theory of limitless growth. Only when evidence piles up that economic growth without limits leads to disaster will ecological economic theories be developed and accepted.

Czech recognizes that people are a biological species. Growth of our human population and consumption of resources follows that of an "r" selected species, which is a term from ecology for a species whose growth is rapid, passes beyond the carrying capacity and then crashes. For an 'r' selected species, growth is regulated by mortality.

However, in Czech's view, overpopulation is only one of the factors leading to deterioration of the environment. Affluence (or per capita consumption), technological damage (such as pollution) and human population equally have an impact on the environment. The inadequacy of gross national product as an indicator of economic performance is discussed. It should be replaced by an index of sustainable economic welfare which takes into account our natural capital and ecological services (i.e. pollination), valued at \$33 trillion. Part One ends with a whirlwind tour of ecological economics in chapter 5, and Czech provides several references for those interested in a broader discussion.

In **Part Two - Stopping the Train** - the author discusses ways to stop the runaway train through the creation of a steady state economy. He begins by dividing the human population into three classes: the 1% of the population that is super-rich, the "liquidators"; the 80% that are poor or in the middle class, the "steady state class" or the "steady staters"; and the remaining 19%, termed "amorphic class", who are intermediate in consumption expenditures.

The characteristics of the liquidators and their lavish spending habits are discussed at length. Czech feels that members of this class should be forced by public opinion to moderate their spending. Ignorant liquidators should be educated and those who know what they are doing should be despised. The relatively modest spending habits of the steady staters, their homes and cars, are acceptable.

Czech suggests that men and women should not choose the big spenders as mates, but rather steady staters. Although the display of wealth is deeply rooted in the animal kingdom, for

example in the growth of huge antlers and gorgeous tail feathers, Czech believes that if people realize that excessive liquidation leads to collapse, they might be able to modify their behavior to one that doesn't threaten mankind's survival. For example, the intelligent woman might reject a liquidator as a suitor because he jeopardizes the grandchildren's well-being. Czech follows the theory that socio-economic evolution can be Lamarckian, in that attitudes and institutions are capable of change, and are "passed onto or initiated by successive generations", especially if the socio-economic conditions creating the need for adaptation remain.

Czech predicts that in a steady state economy, pure saving banks would arise that would accept the surplus money of the liquidators and steady staters, as non-investing, no interest bearing savings. Also, liquidators would dispose of their surplus funds by donating to charities.

Whereas Part One leaves the reader convinced that popular economic theory and practice of continued economic growth will lead to a disastrous future for our grandchildren, Part Two is less convincing and practical. I find some of the solutions to stop the bloating of our economy, such as saving surplus funds in no interest bearing investments and the choosing of ecologically minded mates, somewhat utopian. The huge total consumption of the large class of steady staters, in the form of personal transportation, proliferation of suburbs and mass tourism, is little discussed. The consequences of improved living standards in underdeveloped countries on pollution and depletion of resources are not mentioned. Czech believes that a steady state economy can be achieved in a democratic, free-market society, but there is only a brief

discussion of the consequences of reduced consumer spending, such as economic depression and mass unemployment.

The strength of Czech's book lies in the excellent exposition in Part One - the Runaway Train - that continued economic growth leads to disaster and that we must incorporate into our economic theory the fact that natural

resources are finite. If Part Two - Stopping the Train - is less convincing, then this perhaps demonstrates the difficulty in providing effective solutions. The author presents interesting insights into what is perhaps mankind's biggest challenge, and the book is well worth reading.

Reviewed by Diether P. Peschken,
2900 Rae Street, Regina, SK S4S 1R5



SASKATCHEWAN SCENIC SECRETS

ROBIN AND ARLENE KARPAN. 2001. Parkland Publishing, Saskatoon, SK. 120 pp. Hard cover \$34.95 Can. ISBN 0-88864-298-9. Available from the Nature Saskatchewan Bookshop.

Some of the Karpans' scenic secrets will be familiar to members of Nature Saskatchewan. Probably, however, no one will have visited them all nor have come back with such a superb collection of photographs.

The book is an account of the authors' travels through the province and a collection of photographs taken over a number of years. It takes us through the eleven ecoregions from the south to the north, from parks to little known areas accessible only to those prepared to get off the beaten track. It is not a travel guide but there is a map showing the location of the places mentioned and a list of addresses which facilitate getting to the more remote sites.

The Karpans take us from the rolling prairie in Grasslands National Park to the dense stands of tall trees in the boreal forest; from the unusual landforms at Big Muddy near Bengough to the lush, secluded sanctuary of the

Rendek Elm Forest; from the Great Sandhills, Douglas Dunes and Good Spirit Dunes in the south to the huge desert-like Athabasca Sand Dunes in the north; from hoodoos near Estevan to the sand pillars south of La Ronge; from the wide valleys of prairie rivers to the deep canyons and magnificent waterfalls on the Churchill and Grease rivers; from rich prairie lakes and wetlands of international significance to clear northern lakes, such as the Gem Lakes where "...if you walk the trails when the water is calm, the air is clear and the sunlight just right, these tiny lakes truly glisten like gemstones".

The book is a great presentation of the natural beauty of the province. All 135 photographs are excellent, well reproduced and well formatted. The Karpans must have spent hours or even days, waiting for appropriate light conditions for some of the photographs. Interspersed among the landscape pictures are photographs of

animals that depend on the habitats depicted. We also like the occasional inclusion of people and their red canoe to spark additional interest.

The text includes pertinent information on the flora, fauna, history and geology of the various sites, as well as picturesque anecdotes about the authors' travels. For example, on their visit to the Rendek Elm forest : "To photograph the ferns, we had to wait for calm, cloudy conditions so that the ferns would stay still and the light under the forest canopy would be evenly diffused. Early one July evening when the elements cooperated, we descended the ridge into the enchanted forest below. It was like entering another world. The stillness, heat and humidity weighted heavily with every step and a sweet pungent odor permeated the air. The sensation was immediately familiar; it felt exactly like being in a tropical rainforest." (p. 69)

The Karpans have admirably achieved their goal of showing us the natural beauty and the diversity of

Saskatchewan's as yet unspoiled landscapes. With so much of the natural landscape already disrupted by agriculture, forestry and mining, they hope to raise awareness of the need to conserve what we still have and ... "that governments will not only look at what land does for the economy, but also what the beauty of nature does for our souls" (p.9).

We recommend this well-written book for the fascinating information about the secret places; for the sheer beauty of the photographs; for its non-abrasive message about the importance of habitat protection for the survival of endangered species; and as a stimulus for the reader to get out and see more of the wonders of our province. It would also be a great gift to show outsiders that there is much more to Saskatchewan than wheat fields and grain elevators.

Reviewed by Darlene and Jim Hay,
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SK S7J 3R6.



THE SAND DUNES OF LAKE ATHABASCA: YOUR ADVENTURE IN LEARNING

PETER M. JONKER and J. STAN ROWE. 2001. University Extension Press, Saskatoon. 194 pp., illus., 8.5 x 11 inches. Soft cover, \$34.95 Can. ISBN 0-88880-421-0. Available from the Nature Saskatchewan Bookshop.

The product of many visits to the Athabasca dunes and years of research by two distinguished scientists, *The*

Sand Dunes of Lake Athabasca is designed for readers who want to learn about the geological and human history

of the dunes, the flora and fauna of the region, and the ecological significance of this unique area. It is at once a text book, a field guide, and a travel book — a must for anyone planning to visit the dunes, a marvelous source book for those who have already experienced the grandeur of this pristine wilderness.

Both authors are eminently qualified to write this book. Peter Jonker is currently Director of Environment, Science and Technology programs with the Extension Division, University of Saskatchewan. An ardent naturalist and a devoted ecologist, Peter has conducted annual expeditions to the Lake Athabasca sand dunes since 1991. J. Stan Rowe served 19 years with the Canadian Forestry Service before coming to the University of Saskatchewan where he taught northern wildland ecology for 18 years. An acknowledged authority on the Lake Athabasca sand dunes, Stan has visited them frequently and was instrumental in leading the battle to preserve them as a wilderness park.

The approach and tone of the text is summarized in the following paragraphs from the Foreword:

“This book tries to capture the story of Lake Athabasca sand dunes: a landscape first invented by ancient movements of Earth’s crustal plates, by climate, by ice, by water and wind erosion. These, over vast time, shaped relationships between soil organisms and plants, insects and birds, mammals and amphibian species. Throughout the text we try to throw a little light on the questions: Where and what is it? By what process did it come to be?

“We sincerely hope that by discovering the deeper beauty of this and other wild places you will also discover within yourself a willingness to

set limits on the inclination to manage and change all parts of the other-than-human Earth. Wisdom suggests that what most needs changing is not the nature matrix (matrix means “mother”) in which our culture is set, but culture itself as the carrier of many misplaced ideas and values concerning nature. The task goes beyond simple individual change.”

The book is organized into ten chapters, followed by a valuable bibliography, checklists of plants and animals by common and scientific names, and a subject index. Each chapter is illustrated with supportive photographs, maps, and diagrams. As a sort of diversion for the reader, the authors have added what they call “insets,” little boxes with a buff-colored background, packed with Indian legends, poems (some of the best are Peter’s own), incidents, quotes, and scientific elaborations. One could go through the book a second time just to read the insets.

The Introduction and Chapter 1 deal with the geographic location of the dune fields and how dunes are formed. Chapter 2, “Landscapes for the Visitor,” provides a comprehensive overview of the landforms and vegetation of the entire area. The authors divide the region into three landscape groupings, comprising nine ecosystems. Under Sparsely Vegetated Landscapes, the reader is introduced to strands and shorelines; active sand dunes; sand sheets and fringe ridges; and gravel pavements (always of particular interest to the visitor). In the second section, Landscapes of Vegetated Uplands, beaches and landscapes away from the lake are treated. In the final section, Landscapes of Vegetated Lowlands, the writers have included lakes and groundwater; rivers and valleys; and organic terrain (fens and bogs). Chapter

3 deals with the nine endemic species of plants found nowhere else in the world and a number of other distinctive plant species. Chapters 4-6 deal at some length with the mammals, birds, amphibians, insects and fish of the area. Chapter 7, a well-written chapter which might have come earlier, provides a fascinating geological history of the dune region. Chapter 8 deals with the human history of the area, going back 12000 years, to shortly after the Laurentide ice sheet melted northward. Chapter 9 deals with the historical push for the protection of the dunes, culminating in the creation of Athabasca Sand Dunes Wilderness Park in Saskatchewan in 1992 and the Maybelle River and Richardson River Dunes Wildland Provincial Parks in Alberta in 1998. The final chapter, after telling how to reach the parks, ends appropriately with a discussion of a wilderness ethic and zero-impact camping.

The farther one gets into the book, the more one appreciates its breadth and depth. Whether you want to know how much snow falls on the dunes, which birds breed in the region, or how to distinguish among mammal tracks in the sand, the answers are there. Its particular strengths include its treatment of geological history, dune formation and endemic plants.

In a second edition, some minor changes should be considered. Even

though most of the difficult terms are explained immediately after their first use, a glossary at the end would have been a useful addition (more valuable, probably, than the list of figures that is provided). A large, clear map of the entire region, indicating all place names, lakes, rivers, and major dune areas (perhaps as an end-piece) should have been included. While the diagrams are uniformly clear and well drawn, a few of the maps are inadequate, the quality of blue in the rivers hard to see. Since a visitor to the area is reluctant to carry more than one reference, more distinctive photographs of some of the endemic and other rare plants should have been chosen. The photos of Sea Lyme Grass, Northern Brome, Red Fescue, and Sand Heather, for example, are inadequate aids to identification.

With the reservations noted, I have no hesitation recommending this book to the widest possible audience. Well written, engaging, nicely illustrated, it is the best existing reference on the Athabasca sand dunes. It deserves a place in every public and school library in the province. And don't forget your nature-loving friends and relatives when it comes time to think of Christmas gifts.

Reviewed by J. Frank Roy, 650 Costigan Way, Saskatoon, SK S7J 3R2



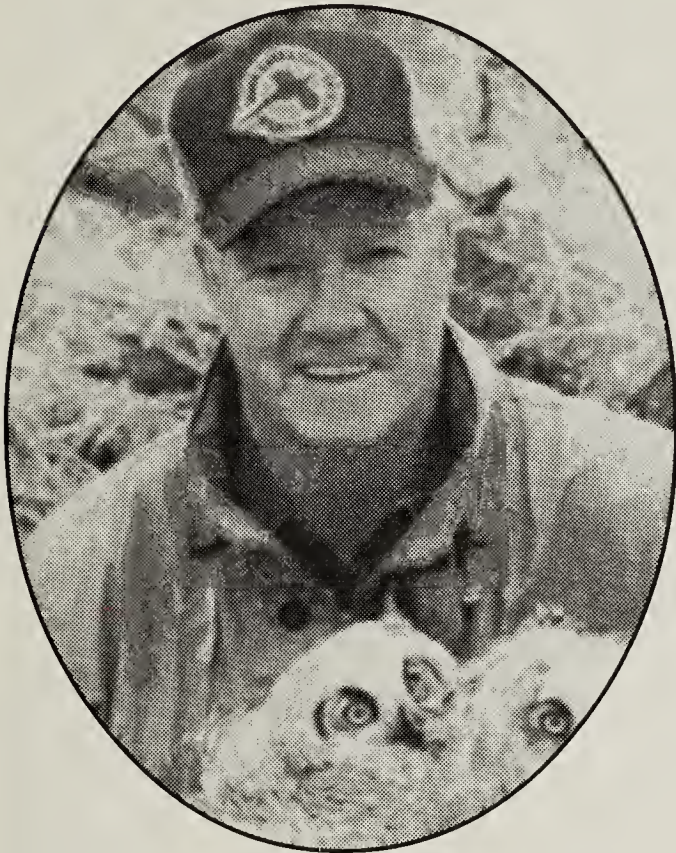
"So far as it is known, no other vertebrate [besides the birds called honeyguides] consumes wax. Microbes or bacteria in the digestive tract enable the unique birds to digest wax. Honeyguides can subsist on wax alone for a time, but it is not an adequate diet and the birds would starve without other food."

Frank S. Todd, 10.001 Titillating Tidbits of Avian Trivia

IN MEMORIAM

BARRIE JACK DOWSE, 1932 - 2000

Ramsay Ross, 62 Bluebell Crescent, Moose Jaw, SK S6J 1A2



Barrie Jack Dowse

Barrie Dowse was born in Moose Jaw on September 21, 1932 and died on October 31, 2000 at the age of 68. He was married to Fern for 46 years and they were blessed with five daughters, five sons-in-law, 15 grandchildren and three great grandchildren.

He was the president of Nature Moose Jaw at the time of his death. He had

spearheaded Nature Saskatchewan's "Spring Meet 2000", which was a very successful and profitable meet.

Barrie was active in his children's activities; he coached girls softball and helped as band manager while they were in the local band. Barrie was also involved with St. Andrews Church, the Masons, the horticulture Society, Nature Moose Jaw and The Good Sam Recreational Vehicle Club (International) and The Band City Good Sams (local).

Barrie really enjoyed the outdoors. He was an avid gardener, growing his own flowers and vegetables as well as supplying family and friends with many plants. He became interested in birding – an interest that I hope that I had some influence on. He and Fern would join my wife, Marj and I in many outings including Nature Saskatchewan's spring and fall meets. Traveling around with their motor home with the Good Sams went right along with their bird watching.

He will be remembered by many, including my wife and I.



MYSTERY PHOTO



SEPTEMBER 2001 MYSTERY PHOTO

I am a wee beast from the slough,
For whom dining on algae won't do!
Without 'frills' round my head,
I would surely be dead,
For I need to breath, just like you!

Photograph and limerick submitted by Danna Schock, photograph taken by Kathie Nordstrom.

Answer to JUNE 2001 MYSTERY PHOTO



Lewis Bevan

The mystery object is a mud "pot", built on a twig or branch by a female Potter Wasp. She attaches an egg to the inside of the pot and provisions the pot with an anaesthetized caterpillar, as food for the wasp larva that will hatch out of the egg. Then the pot is sealed with mud and the young wasp must cut a hole to get out.

According to the Audubon Society Field Guide to North American Insects and Spiders by Lorus & Margery Milne, 1980, "The provision chamber may

be up to 1/2" (12 mm) wide. It is totally resistant to rain until the young wasp cuts an exit hole from the inside. Often several of these pot-like chambers appear on twigs." The subfamily Eumeninae (Mason & Potter Wasps) of the family Vespidae includes 260 North American species at least, and most of them prey on caterpillars (Lepidoptera). (Borror, Triplehorn, & White, 1992 (6th Ed.), An Introduction to the Study of Insects).

The editors would like to thank Jim Wolford for providing much of the information given above. Jim adds, "I think I've only seen one of these in the field, and we were very lucky to find an adult wasp (must have just emerged from the pupa) inside the pot, which was on a Blackberry bush stem on August 11, 1980, at White Rock, N.S. The wasp was mostly black, with a few white? or yellow? markings."

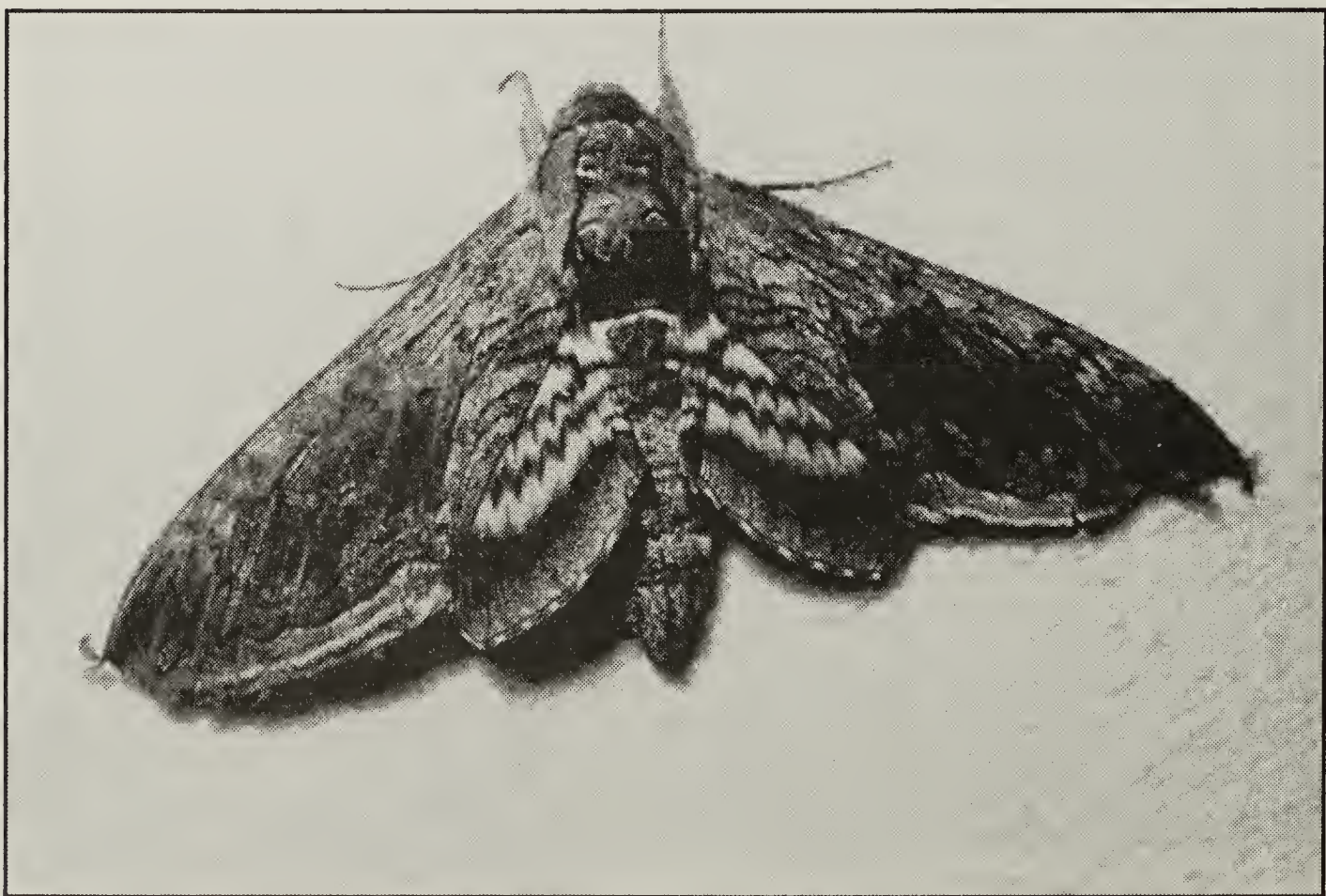


Storm over the South Saskatchewan River west of Leader, SK on August 17, 1981
Chris Adams



Striped Morning Sphinx

Fred Lahrman



Tomato Hornworm

Richard Fyfe

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